

TURNING OVER TO POWER SIGNALLING

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"THE TIMES" OF THE TRANSPORT WORLD

KNOWLEDGE OF BUS LOADINGS

See Page 7

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PRICE NINEPENCE

CURRENT TOPICS

The Institute's Session Opens

THIS week's presidential address to the Institute of Transport, in its content and delivery, must rank among the most effective and valuable contributions to that body. Taking as his theme management in transport, to which much attention has already been given (notably by Mr. T. W. Royle in his presidential address of 1947), Major-General G. N. Russell gave fresh thought to a vital subject in an address replete with inspiring apophthegms. Drawing a distinction between the science of management organisation and the art of management leadership he warned: "Let us take care we do not face the problems of the atomic era with a horse-and-cart mentality." He described transport as an individualist industry, in which personal relationship must be encouraged. Instructions must always be brief, clear and concisely written. "It must be assumed that people certainly cannot write, and quite a few cannot read!" Managers must be capable of tackling these two basic subjects. Joint consultation must be a reality and not a sham. The art of management was leadership, the human touch which breathed life into all the systems he had outlined and which would break down the awful barrier between "we" and "they." Qualities to be looked for in a leader were courage, will-power, judgment, knowledge and flexibility of mind (to which might be added human sympathy). Two mottoes appropriate to the transport industry were "Service not self" and "The impossible we will do today, miracles take a little longer." A noteworthy address, as we predicted last week, and one which, its author hopes, will be studied by the younger members of the Institute who, incidentally, he is most anxious to meet during his forthcoming tour of the local sections. Scintillatingly proposing a vote of thanks for the address Mr. Peter Masefield, a past-president, referred to General Russell as a man of vigour, good humour and sincerity and as bringing high ability to his office. He was also a man of courage; as Euripides had remarked: "To him who is in fear everything rustles." A most rewarding evening.

Road Programme Gathers Momentum

PLANS to provide the missing links in the Government's current road-building programme, which aims to spend £240 million to provide the first stage of a national network of modern trunk roads and to remove some of the worst causes of congestion in London and provincial urban centres, were announced by Mr. Harold Watkinson, Minister of Transport and Civil Aviation, at a news conference in London on Tuesday. Chief of these was the linking of three of the motorways now under construction—the London—Birmingham, Birmingham—Preston and Midlands—South Wales motorways, a difficult problem involving the crossing of the Birmingham conurbation, for which a bold and imaginative plan has now been devised. The plan envisaged a common meeting point for the three roads at a point just south of Walsall and this would involve building some 3½ miles of the western link on a viaduct above the railway line through Smethwick and Oldbury at a fairly uniform height of about 45 ft. to avoid heavy demolition of property. For the same reason, the consulting engineers, Sir Owen Williams and Partners, had put forward a proposal to culvert the River Tame for about 1½ miles and carry the eastern link, which passed within 2½ miles of the centre of Birmingham, along the top of the culvert. The Minister said that the local authorities through whose areas the routes ran were about to be invited to examine and comment on the proposals and that British Railways was helping in examining the plan for the viaduct over the railway and considered it feasible. If such proved the case, it might well provide a pattern for the solution of some of our urgent urban traffic problems. Mr. Watkinson also announced new proposals for the alignment of the extension towards Yorkshire of the London—Birmingham Motorway, and for linking the proposed London—South Wales Motorway with the Chiswick Flyover.

Work of the Consultative Committees

SINCE the appointment of transport users' consultative committees under the 1947 and 1953 Transport Acts there have been two major criticisms directed against them, the first that insufficient publicity was given to their existence and that they were accordingly under-utilised, the second that they had no power to compel acceptance by the British Transport Commission of their recommendations. It appears likely that the first complaint no longer has any foundation and that the area committees have more than enough to keep them busy, though it would be a

able to commend the statesmanlike attitude of the T.U.C. General Council in the London bus strike and to appreciate "the wisdom and the coolness shown in much more difficult negotiations by the leaders of the three railway unions, the miners and the engineers." In wages settlements, he said, there had been a very genuine and in many cases successful search for matching economies. Settlements had been not only lower but slower, and so it might be hoped that the annual automatic cycle which did so much harm was on its way out. The aim was a steady increase in real earnings and he stressed that voluntary

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pity if preoccupation with proposals for the complete withdrawal of train services, or the closure of lines or stations, were to leave them inadequate opportunities for considering representations of a more varied but nonetheless weighty character. A booklet (price 6d.) on the work of the committees which the Central Transport Consultative Committee has just published stresses that the second criticism is based on a misconception of the role of the committees. They are essentially a body of influential transport users prepared to take up the cudgels on behalf of others who cannot obtain satisfaction from B.T.C. railway or road undertakings through the normal channels—not a judicial authority or even an arbitration tribunal. Moreover, they are a part-time unpaid body of public-spirited men who cannot be expected to formulate views on general transport policy or to be constantly probing transport efficiency. Though devoid of compulsory powers, their efficacy and standing in the eyes of the B.T.C. is evidenced in the fact that not one of the formal recommendations of an area committee, as confirmed by the central committee, has yet been ignored by the Commission. Inevitably they must lean heavily on the Commission for much of their information but there is absolutely no reason why their members should be over-influenced thereby.

Soft Pedal on Transport

LAST week's conference at Blackpool gave no indication that the Conservatives, unlike Labour, have any further designs on transport. This is as well, because one would have difficulty in assessing the net value of the results of political interference over the past few years. The assessment, of course, would not include the plans for road development and railway modernisation which sheer necessity would have forced in any case. On the improved economic outlook the Government has just cause for satisfaction. It has indeed avoided the calamities which "the other side" prophesied 12 months ago would result from its policies. Far from there having been "war with the unions" Mr. Ian Macleod, Minister of Labour, was

arbitration, a precious part of our industrial system, should be independent of Government, trade unions and employers; those who used the system should uphold its authority at all times. Reviewing the economic position, Mr. Heathcoat Amory, Chancellor of the Exchequer, said that the essence of the party's policy was expansion based on a dynamic economy. They wanted the highest level of production and employment consistent with reasonable price stability and the avoidance of dangers to the country's balance of payments and reserve. But they were not prepared to risk a return to inflation.

Aid to Ulster Trade

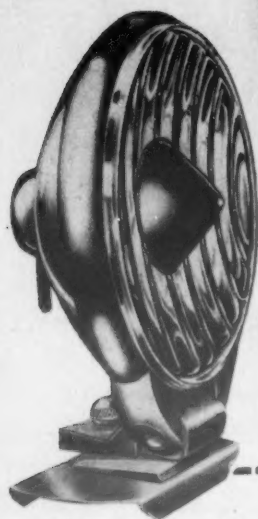
THE second of the specially designed vessels for the roll-on-roll-off operations of the Transport Ferry Service between Britain and Northern Ireland and Britain and the Continent entered service last week. *Ionic Ferry* was built at Dumbarton by William Denny and Brothers, Limited, as was her sister ship *Bardic Ferry*, which was described in our issue of September 28, 1957. Weather on the maiden voyage on October 10 could not be called clement, but the traffic carried demonstrated clearly the value of this service between Preston and Larne or Belfast not only to traders themselves but also to the economy of Northern Ireland. It is generally appreciated that conditions in the Six Counties have been difficult on the score of unemployment for far longer than in Britain. Vigorous efforts have been made to develop new industries, the Government being especially helpful when it comes to finding suitable sites and financing the building of factories. Since 1945 no fewer than 130 new plants have been established in Ulster and it is reasonable to say that the majority of them benefit from the existence of the Transport Ferry Service which carries to and fro raw materials and finished products. The arrival of *Ionic Ferry* has released her sister ship for the time being to operate on the Tilbury—Antwerp service, as recorded in our last issue, but the real future that may be expected is indicated in the news that two more ships are to be ordered.

International Transport

A VALUABLE postwar development in the commercial field was the setting up in 1953 of a European Conference of Ministers of Transport, whose ninth session is being held in London this week under the chairmanship of Mr. Harold Watkinson, Minister of Transport and Civil Aviation. Seventeen countries are represented at the conference, which serves under the aegis of the Organisation for European Economic Co-operation. It is the focal point of the activities of the many international bodies concerned with the provision and use of transport and in its five years' existence it has shown a gratifying breadth of outlook. It has indeed done much to facilitate international transits, to codify regulations and to establish and encourage identity of interest between carrier and user; requirements of the latter enjoy the capable advocacy of the International Chamber of Commerce. A recent task undertaken by E.C.M.T. has been the preparation of a report on the financial situation of the railways, in which causes of declining revenues are analysed and possible remedies proposed; in their studies of this subject the ministers and their deputies had the active support and advice of both the International Union of Railways and the International Chamber of Commerce. The conference was formally opened by Mr. Watkinson on Wednesday and the business sessions are proceeding as we go to press. The programme includes conducted tours of London and Windsor, a visit to the Port of London as guests of the P.L.A., and a journey to Cambridge by special train, hauled by one of the new 2,000-h.p. diesel-electric locomotives, at the invitation of the British Transport Commission. Selected members are visiting the U.K. Atomic Energy Research Establishment at Harwell, and the Government is entertaining the delegates at a banquet at Lancaster House.

Self-Interest Rampant

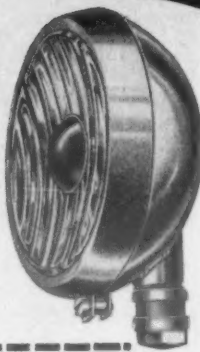
A WEEK after the British Overseas Airways Corporation had inaugurated its Comet service across the North Atlantic and in the week when it was due to begin a Britannia service between London and Caracas and thus commence what must be a stern battle to establish itself on routes to South America—it has had none for four years—the Corporation found itself compelled to suspend all its flights from London. This was due to an unofficial strike by its engineers and maintenance men. They alleged dismissal of five men for refusing to work overtime which had been banned in support of a pay claim. This seems to provide the worst example yet of self-interest on the part of workers to the exclusion of any sense of national pride and also an inherent admission of complete incapacity to see farther than the ends of their own noses. Despite a warning by the secretary of the trade union side of the National Joint Council for Civil Air Transport, Mr. Jim Matthews, that they had broken the constitutional machinery and that passengers lost to B.O.A.C. now might never return, a "spokesman" announced complacently that they were 100 per cent together on this issue. They would, of course, be the first to complain if B.O.A.C. found as a result of the setback that still further economies were necessary and that more of its staff would have to go. To make matters even worse it was decided to seek support from engineers of British European Airways. Have these men no pride in British air transport and what it has achieved and have they no faith in what it can do in the future? The conclusion must, we fear, be that they have not. Such selfishness to the detriment of the national wellbeing has been too frequent. Last year's provincial bus strike and this year's effort by the London men had an incalculable effect upon the tourist trade which is so vital to Britain and that just when the earlier railway strike was being forgotten by potential visitors. There are plenty of other countries willing to welcome them and there are other airlines prepared to carry frustrated passengers. It should have dawned upon these workers long ago.



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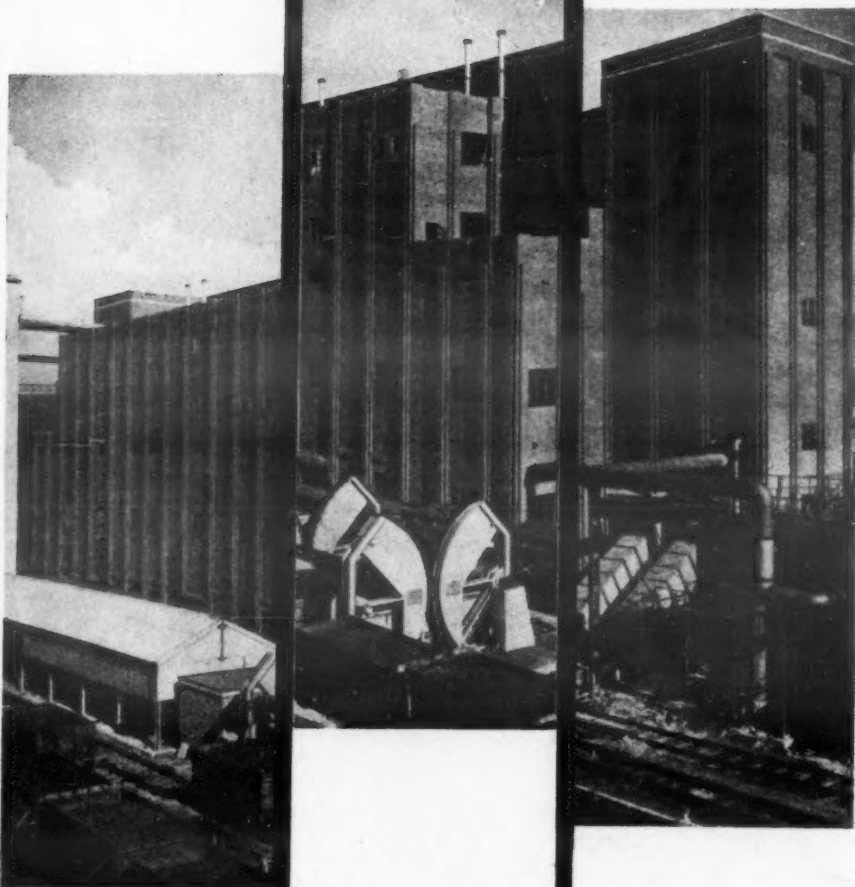
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The Editor is prepared to consider contributions offered for publication in MODERN TRANSPORT, but intending contributors should first study the length and style of articles appearing in the paper and satisfy themselves that the topic with which they propose to deal is relevant to editorial requirements. In controversial subjects relating to all aspects of transport and traffic this newspaper offers a platform for independent comment and debate, its object being to encourage the provision of all forms of transport in the best interests of the community.

Protecting Level Crossings

AN exceptional type of level crossing accident is the subject of a report to the Minister of Transport by Colonel D. McMullen, inspecting officer of railways. It took place on Sunday, April 27, 1958, at Funtham's Lane occupation level crossing, near Whittlesea, on the line between March and Peterborough in the Eastern Region, when the 11.20 a.m. down passenger train from March, running at about 50 m.p.h. under clear signals, struck a car and killed its three occupants. The road gives access to two brickfields and it passes over the two main lines as well as over a siding and a connection from the siding into a brickfield. The crossing is provided with two 16-ft. field type gates opening away from the line, and wicket gates, and the distance between the crossing gates is about 84 ft. There had been several accidents there previously, and a number of cautionary indicators and notices had been provided. According to the Act under which the line was constructed (Eastern Counties Railway Act, 1844) the road is referenced as an occupation road, but owing to diversion of traffic from rail to road the use of the crossing has increased considerably in recent years. A census taken since the accident shows it to be approximately 500 motor vehicles, 400 motor cycles and bicycles and 150 pedestrians daily, rail traffic being 90 trains a day. Road traffic continues more or less throughout the 24 hours; on Sundays it is not heavy but still considerable. Most of the vehicles are heavy lorries, the property of the brick companies. Since the accident the police have placed two notices near the junction of the lane with the main road indicating that the lane is private and not a through road. Evidence indicated that despite warnings to the brick companies the gates had for some time been consistently left open.

Gates Left Open

THE inspecting officer states there is no doubt that the gates of the crossing were open and that the car was driven straight on to it in the path of the train when the indicators were showing "Train coming—Stop." He considers that the engine driver was in no way responsible for the accident. The car driver was not a local resident and was probably unaware that the lane crossed a railway. Certain alterations, including provision of a conspicuous advance notice board, are being put in hand forthwith, but these, states the inspecting officer, can be considered only as palliatives. The road user is now many times greater than was ever contemplated for any occupation type of crossing, and is much in excess of that at many public crossings with attendants. Appointment of attendants to work the gates would not improve matters unless the gates were coupled together and worked by a wheel and interlocked with the signals—an expensive procedure. However, failing this, the inspecting officer feels that sooner or later there is likely to be another accident, which might even result in the derailment of a train. Apart from continuous manning, he considers that the only satisfactory method of protecting the crossing is by automatically-operated half barriers of the kind described in *Provisional Requirements* issued by the Minister and dated May 1, 1958. Curiously enough, however, this type of protection does not comply with the law, as the British Transport Commission Act of 1957 authorises it only at public level crossings. He therefore recommends that the Commission should seek special powers from Parliament.

* Level Crossing Protection (H.M. Stationery Office, 2s. 6d. net).

Crossings Cost £1 million a Year

THE accident indeed draws attention to the whole problem of level crossings over railways. In its memorandum to the Minister on railway policy and prospects, which received ministerial endorsement in a White Paper (Cmd. 9880) presented to Parliament in October, 1956, the Commission referred to the provision of gates and attendants at level crossings as being among the out-of-date statutory obligations from which it sought relief. It stated that the cost of manning such crossings had in some cases increased from about £50 to £400 a year and in total had risen from £220,000 in 1938 to around £1 million today. In obedience to the Regulation of Railways Act of 1845 some 4,000 public level crossings were equipped with gates; for these, under the Commission's private Act of 1954, lifting barriers could be substituted, subject to the Minister's consent in each individual case. But, it was stated, no major economies could be obtained so long as the Commission was required by law to maintain staff at such crossings and was therefore precluded from operating lifting barriers either automatically by track circuits or remotely from the nearest signalbox, as was the practice on the Continent. This position has now been remedied following a report on the subject* by a party, representative of the Ministry and the Commission, which inspected Continental installations. Recognising the need for a fundamental change in outlook the team pointed to the uselessness, in the light of modern heavy road vehicles, of the protection afforded by the heavy wooden gate and to the conspicuousness which could be fully achieved by the lightly constructed barrier equipped with modern reflecting material, mechanically more efficient than the gate and capable of easier and quicker operation.

Safety from Machinery

THE report concluded that lifting barriers would be suitable for use at almost all level crossings now operated by an attendant at the site. The barriers (interlocked with the railway signals) would be long enough to cover the full width of the road or be in the form of double half-barriers on each side of the track. The barriers and their stiff folding skirts would be made conspicuous by alternate red and white stripes and be provided with reflectors or reflecting material and with lights; road traffic conditions might also require red flashing signals at the side of the highway. For crossings operated remotely the system was stated to eliminate the risk of misunderstandings between signalmen and gatekeepers and might be employed with safety at certain places and with substantial economies in operation; in general, the crossings should be on relatively unimportant roads and within a quarter of a mile of, and in view from, the point of operation, but where road traffic was light an "on call" crossing (barriers normally closed to the road) at a greater distance and out of sight of the operator might be considered. For crossings operated automatically the half-barrier equipment (as recommended for Funtham's Lane), developed in recent years on the Continent, was found to have been successful and should prove safe in this country. It was emphasised that the barriers must be timed to fall so that a train would invariably pass within a few seconds and be timed to rise immediately after the train had passed. The team shared the view expressed in countries visited that automatic was more reliable than human operation, pointing out that, although at most crossings in Great Britain gates and signals are interlocked, there had been accidents arising from errors by gatekeepers and from misunderstandings between them and signalmen. Safety, it was stated, would be no less with automatic operation; it would benefit road traffic substantially and would result in economies to the Commission.

Forthcoming Events

October 18.—Light Railway Transport League. Tramway films by Mr. S. Eades. At St. Chads House, Abbey Lane, Sheffield. 2.30 p.m.
October 20.—Institute of Transport (Sussex). Paper by Mr. C. J. George, "Transport, Electricity and the Future," Arlington Hotel, Brighton. 6.30 p.m.
Institution of Civil Engineers. Paper by Mr. R. H. Wood, "Stability of Tall Buildings." At Great George Street, S.W.1. 5.30 p.m.
Permanent Way Institution. Paper by Mr. E. G. Newens, "Temple Mills Marshalling Yard." At 222 Marylebone Road, N.W.1. 5.45 p.m.
Railway Correspondence and Travel Society (Merseyside). Paper by Mr. F. Blair, "Railways and Traffic of Lever Brothers, Port Sunlight." At Woodside Hotel, Birkenhead. 7.30 p.m.
October 21.—Institute of Transport (Humbly Grove). Paper by Mr. D. Stewart, "Training for Transport Management." At Samman House, Hull. 7.30 p.m.
Institute of Transport (Visual Aids). Aviation films and discussion. At 80 Portland Place, W.1. 6.15 p.m.
Institute of Transport (Portsmouth). Paper by Lieut. G. R. Lush, "The L.G.V. Base, Hailay Bay, Antarctic." At Chamber of Commerce, Portsmouth. 7 p.m.
Institute of Transport (Midland). Paper by Mr. O. H. Prosser, "Coal Transport by Canal." At Exchange and Engineering Centre, Birmingham. 2. 6.45 p.m.
October 22—November 1.—International Motor Show. At Earls Court, London.
October 23.—Institute of Transport (Bournemouth—Poole). "Battery and Battery Development." At Town Hall, Bournemouth. 5.30 p.m.
Institute of Transport (South West Lancs). Films. At Town Hall, Wigan. 6.45 p.m.
Institution of Railway Signal Engineers. Paper by Mr. R. Dell, "Automatic Junction Working and Route Setting by Programme." At Institution of Electrical Engineers, Savoy Place, W.C.2. 6 p.m.
October 24.—Institute of Transport (Leeds G. and S.). Annual dinner. At Griffin Hotel, Boar Lane, Leeds. 7.15 p.m.
October 26-31.—International Road Federation world meeting. At Mexico City.
November 5-16.—International Motor Show. At Turin.

MANAGEMENT IN TRANSPORT

Presidential Address to Institute of Transport

By Major-General G. N. RUSSELL, C.B., C.B.E., M.Inst.T., General Manager and Chairman of Board of Management, British Road Services; Member, Eastern Area Board, B.T.C.*

MANAGEMENT is a very wide subject, but I think it can be divided into two clear divisions: the science or theory of management, which might well be termed "organisation," and the art or practice of management—in other words, leadership." It may appear that what I have to say concerns only larger undertakings, but the principles are applicable to large and small concerns alike, and, what is very often forgotten, they should always most carefully be applied to small units of large concerns.

The transport industry consists of a wide range of types and sizes of organisations. It is a much more individualistic industry than the general run, and our management system must be designed to take care of this.

Giving a Service

It again differs from other industries in that transport exists to give a service. Transport cannot generally create the demand, but it must see that the demand is met, and indeed stimulated. It must as a service keep abreast of the times, it must never say that this is too difficult, or indeed impossible. It seems to me that, above all, those whose chosen vocation is to take part in the provision of transport services must appreciate the fact that transport is susceptible to rapid change. Let us take care we do not face the problems of the atomic era with a horse-and-cart mentality.

Changes in the shape of transport facilities are matched by changes in the types of goods to be carried. Changes in the habits and requirements of users must also be coped with. The individualism of the pre-railway age was superseded by the more regimented movement by rail of men and merchandise in bulk, a phase which has, in turn, given place to the "do it yourself" way of life, which shows itself in abundance in the family motor car and the C-licensed vehicle.

Adaptability to Change

It has been wisely said that the only living organisms which survive are those that adapt themselves to change. This is vital in transport, and indeed lends emphasis to the importance of inquiring where the new recruits to transport are coming from, and how they are being trained and encouraged to play their full part in the evolution of our transport system. On the technical side, vehicles have improved out of all knowledge during this period. Can the same be said of techniques generally? Have new ideas, new methods, been explored to the full? I think the answer must, on the whole, be in the negative.

All this involves market research in the widest sense. A scientific approach to the problem of locating and assessing users' present requirements, and forecasting future needs, is a vital necessity if our undertakings are to be successful. Much can be done by way of thinking for one's potential customer, and devising novel ways and means of meeting his requirements. This is an aspect of the management system of transport undertakings which has recently been severely neglected.

Science of Management

Reference to the management system of a large undertaking may conjure up pictures of complicated charts and intricate lines of responsibility and command. Yet, in truth, it is nothing more than the organisation of a small undertaking writ large. The moment a small proprietor finds that his business is too big for him to attend to personally and that he must have someone to help him, organisation questions arise, if only in simple form. First of all, it is necessary to have a clear objective. Everyone must have a clear purpose, and the sum total of these purposes should represent the overriding purpose of the undertaking as a whole.

It is also self-evident that, however large or small the undertaking, each person who works in it should know exactly where he fits into the pattern, and what his responsibilities are. In a large undertaking, responsibilities should be written down in plain and unambiguous terms, and steps must be taken to see that they are clearly understood. For a small undertaking, they may not be written down, but again they must be clearly understood. This is the basic essential, and, needless to say, authority must match responsibility. Nothing can be more frustrating than to be assigned a task without clearly being given authority sufficient to carry out that task efficiently and well. Authority must be widely devolved, because of the individualistic nature of the industry to which I have already referred. The limits of this authority must be crystal clear.

Chain of Command

Just as important as knowing precisely *what* one is responsible for doing is knowing *to whom* one is responsible therefor. In plain language, every man should know clearly who is his boss, and, generally speaking, no man can serve two masters. Similarly, there are definite limits to the number of subordinates and management groups a manager can effectively control. A good guide is to think in terms of five, both inside and outside the office. As an organisation increases in size, chains of command and responsibility become more complicated. For example, one school of thought will advocate a functional form of organisation, in which the technical expert at the top has a direct line of command running right down to the actual scene of operations.

Another school would prefer a system in which the manager is supported with all the technical advice he needs, and is given complete responsibility for everything that happens within his allotted sphere. All orders would be issued in the name of the general manager at the top, and would be addressed to the manager at the next level. In carrying out these orders, and in the performance of his duties generally, the manager would have the benefit of the advice of his technical experts who form part of his headquarters. There is one most important point to note. The senior technical man must be in the headquarters team, and must be accepted as such throughout the organisation. He sets the professional standards of the organisation,

and it is on his advice that all systems of maintenance are established.

Personally, I would choose this system in the transport business in preference to a functional organisation, because of the necessity of putting on one person the responsibility to give service to his customers as captain of the local team, without his having to look over his shoulder to some distant headquarters for technical instructions. The really important thing, however, is to make it abundantly clear which form of organisation is in fact in operation. Endless confusion can be caused by failure to do so. However organised, basic units must in this transport industry of ours be small enough for everyone to know everybody, and, perhaps most important of all from the service point of view, for a personal relationship to be established with those whom they serve.

Communications

Having established a clear and well-defined structure, the importance of a sound communication system cannot be too strongly emphasised. With a small proprietor, the problem of communications is an easy one. In a large undertaking, the problem of communications is more complex, but the system must be just as straightforward in all its essentials.

The first step then is to have a central board which settles overall policy. Not in a vacuum without taking advice of those who are doing the job, but as part of the management organisation which I am describing. The next step is to make sure that, as policy is formulated step by step in pursuance of the overall objectives, policy decisions are made known to all who have responsibility for their implementation.

Managerial Meetings

Perhaps the best method of doing this is for the general manager to meet, say, quarterly, all those managers directly responsible to him, together with his departmental heads for the triple purpose of explaining, shaping, and communicating policy, and using ideas that emerge from these conferences as the material for future development. This approach, I think, avoids the dangers which attend the issue of rigid directives of policy ex cathedra without the benefit of the advice which only those who have to carry out the instructions can give. The size of the undertaking will influence the development of this system farther down the line, but if size warrants it the managers who have attended the general manager's conference should hold their own meetings following on the one at headquarters, and so on farther down if necessary.

I am absolutely sure that each manager should, through the terms of a balance sheet, render an account to his superior for that part of the business for which he is responsible at frequent and regular management meetings.

Brevity and Clarity

There must be a proper system for the issue of orders and instructions. It must be quite clear to all concerned who is the issuing authority and to whom they are going. There must be a proper system of recording them, and of ensuring that all concerned are made fully aware of them. My view is that instructions should be kept to a minimum, and that they should be built up into a well and carefully indexed manual, which should serve as a general code for all to follow.

The important points to note in framing instructions are that they should be brief, clear, and concisely written. I am a great believer in framing instructions so that the recipient sees the whole picture. At any level a person will function more intelligently if he can see the full implications of his own particular duties. I cannot leave this aspect of the subject without referring to the great importance of the written and spoken word. More misunderstanding and confusion is caused by people failing to make clear in simple English what is in their minds.

Staff Relations

These basic systems must be supplemented by more unofficial devices such as staff magazines, periodical bulletins, posters, notices, suggestion schemes, and the like. One might term this aspect internal staff relations, and it is not only a case of informing the staff but of knowing what the staff are thinking. It is an important two-way traffic, which is the responsibility of management at all levels, and, although special assistance may be necessary, I should emphasise it is only assistance, because this is a function which the manager cannot delegate or shelve.

I feel that managements should boldly face the fact that they can learn a lot from the man at the wheel or the bench, and it is sheer foolishness to spurn the benefits that joint consultation can bring. It must be regarded as a two-way mechanism which provides a means not only of passing information to the staff, and of securing consideration and acceptance of new ideas, but also of gaining practical experience of existing arrangements and proposed changes. Joint consultation should be used as a joint means of increasing efficiency. The idea must be fostered that it is an effective instrument, and that management will welcome and quickly give effect to any worthwhile suggestions that may be put forward.

Success can be the more easily achieved if all who are engaged in an undertaking feel that they are truly partners in a joint venture, and that their wellbeing and prosperity are closely bound up with that of the undertaking as a whole. The responsibilities at the various levels, and the links in the interwoven chains, must be clearly defined, but it is essential to bear in mind that the links are human links. It is the human touch that is needed to bring the machine to life, and unless it is brought to life, and kept alive, it will fail for certain.

Art and Practice of Management

Leadership is something which can only be exercised through the projection of personality. In the first place, however large the organisation, the head man—"the boss"—must be known as a person. This can only be achieved by the boss being seen as frequently as possible, and moving about amongst all his subordinates. Modern developments in telecommunications make it quite

(Continued on page 12)

World-wide approval of the OLYMPIC



Operators in a score of countries all over the world acclaim the safety and comfort of the Olympic, renowned for the great strength of its chassisless construction and ease of handling in all kinds of traffic.

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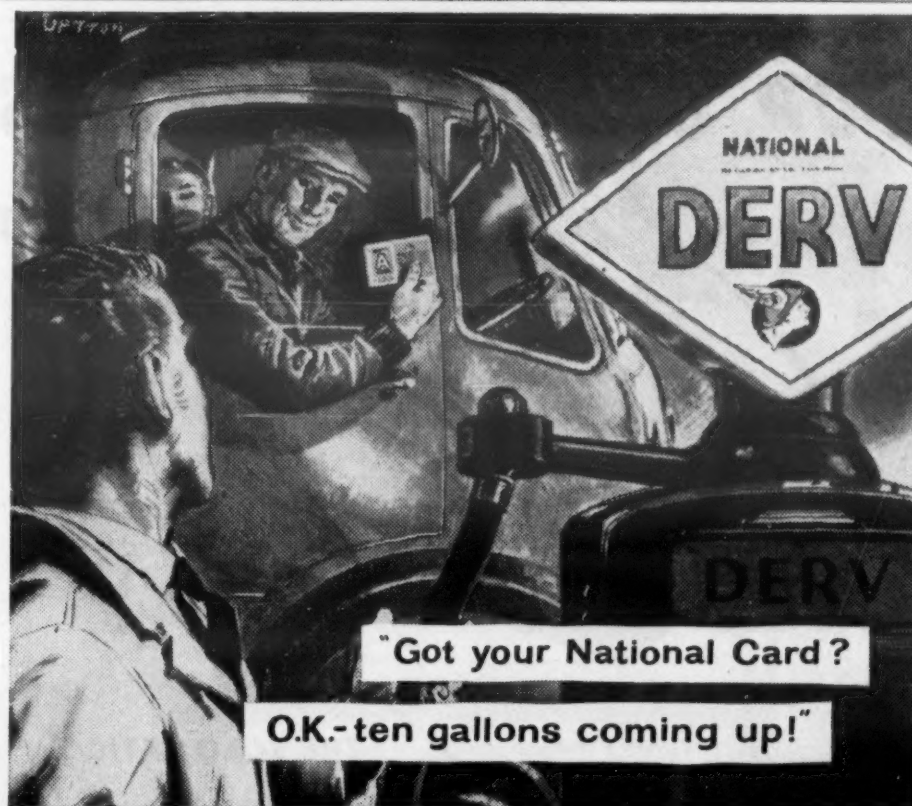
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NATIONAL DERV

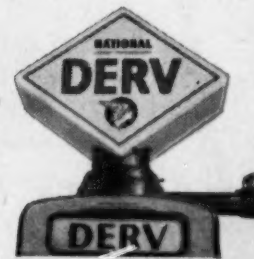
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* Abstract of the address presented in London on October 13 at the inaugural meeting of the 1958-59 session.

LORRY—BUS—COACH

New Company on Continental Route

FREIGHT services for containers and trailers are to be operated between Britain and the Continent by a new company, United Kingdom—European Transport, Limited, the majority interest in which will be held by Northern Ireland Trailers, Limited, of Belfast and Preston. The other participant in this venture, which was foreshadowed at the beginning of this year, is Anglo-Overseas Transport Co., Limited. The new service will operate via the Tilbury—Antwerp ferry to destinations in Benelux countries and West Germany. Anglo-Overseas will manage the London sector of operations.

It is not envisaged that much traffic will originate from Northern Ireland and the English side of the haulage operation will probably be performed by tractors on a contract basis, although Northern Ireland Trailers has articulated vehicles operating from Preston Docks. The Antwerp haulier, Van Gaever and Company, is available to haul trailers in Belgium but it is hoped to form a pool of N.I.T. equipment in West Germany to be hauled by German-owned tractors. It is also stated that Northern Ireland Trailers is shortly to take delivery of a Swedish-built ship under the British flag. It will operate between Larne and Ardrossan and, at weekends, between Preston and Larne. Although on charter at the moment, the company has an option to buy.

Barton Celebrates First 50 Years

NEARLY 500 guests with employees past and present attended a golden jubilee dinner and dance given by Barton Transport, Limited, at the Sherwood Rooms, Nottingham, last week. "Barton Transport was a pioneer in transport in the true sense," said Mr. T. Robert Williams, chairman of the Public Transport Association, proposing "The Company." "It is also a little-known fact that in 1928, it used the diesel engine in a bus," he added. "They enjoy a high reputation, not only in this country, but also on the Continent, and if they continue with their present high standards of efficiency and service, they are bound to prosper."

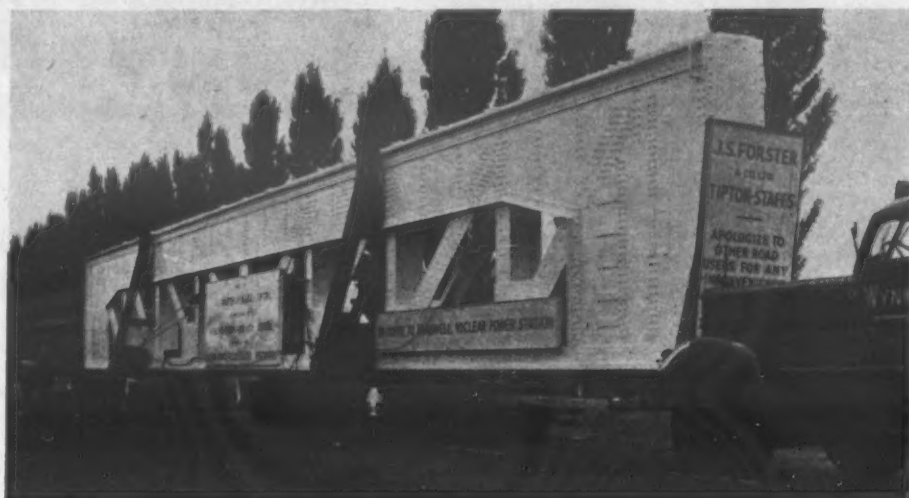
Normal User Consolidated

SUBJECT to an amended user to meet railway objections, J. G. Barrack, Aberdeen, applied for a new A-licence in respect of 22 vehicles meantime operating on special A- or ordinary A-licences, together with one trailer. The purpose of the application was to allow the fleet to be consolidated and a normal user to be declared for the whole fleet. For the applicant, Mr. W. D. Connochie announced that he was prepared to amend the normal user in respect of the vehicles and the trailer, which would authorise the applicant to operate 40 per cent of his fleet on general goods up to 50 miles; 40 per cent general goods in the rest of Scotland; and the balance elsewhere.

Outsize Girder Skirts London

LAST week Robert Wynn and Sons, Limited, moved the first of two braced steel girders weighing 104 tons from Tipton, Staffs, to the nuclear power station under construction at Brad-

well, Essex. The overall height was 15 ft. 4 in. Two Diamond-T tractors were used and the load was carried on two low-loading German-made Scheuerle trailers which were obtained by the operator about a year ago. The route to the destination included a section of the North Circular Road in London which was traversed at night. The length of the girder was 106 ft. and our illustration shows the train at South Mimms before entering the London area. These trailers were referred to in our September 28, 1957, issue, when a similar



Girder for Bradwell nuclear power station at South Mimms last week (see paragraph). The twin German-built Scheuerle trailers of R. Wynn and Sons are powered by a pair of Diamond-T tractors

unit was on exhibition at the Frankfurt Motor Show. The 32 twin solid-tyred wheels are all power steered, a small engine providing a hydraulic supply.

Nottingham Places Vans Before Cars

FOLLOWING discussions with the city police, Nottingham Chamber of Commerce has agreed that private cars should be banned from parking in the city centre during rush hours on four weekdays to cut congestion. But the Chamber will not support a full ban—which would also apply to goods vehicles—until the police can demonstrate that it is necessary to prohibit loading and unloading during peak hours. Subject to this proviso, the Chamber agreed in a resolution passed at its last meeting that the no waiting should apply in 14 Nottingham streets from 8.20 to 9.10 a.m. and 5.15 to 6.15 p.m. every Monday, Tuesday, Wednesday and Friday. This follows a two-day experiment in July. Mr. J. J. Brown, chairman of the traffic section, said some firms had made special arrangements for loading and unloading during the experiment but there was some doubt about what the effect would be if the ban became permanent.

British Road Services went into the matter in a scientific way and produced evidence that its cost per ton for collection and delivery had increased. "No evidence was placed before us by the police that the congestion was solely due to vehicles parked for collection and delivery," he added.

Correction Courses Turned Down

OFFENDERS under the Road Traffic Acts should attend centres for re-education and for training in road behaviour. This resolution, proposed by the Chief Constable of Cambridge, was rejected by the National Safety Congress at Bridlington last week, after delegates had made the point that for other crimes attempts were made to return the offender to society as someone unlikely to be a further menace to his fellow-citizens. Mr. B. N. Bebbington, the chief constable, said that in road

day evening traffic decline during the summer months and an attempt may be made to introduce similar tickets in this period. During the year ended May 28, passengers carried on Edinburgh buses fell by 13 million to 233 million although mileage was up by 762,000 at 27,679,332 miles.

Company Bus Claim Before Tribunal

THE claim for a wage increase and a pension scheme on behalf of 100,000 employees of company-owned provincial bus undertakings was argued on Friday last week before the Industrial Disputes Tribunal. The tribunal is expected to give its ruling in about a week. In August the six unions involved rejected an offer of 5s. a week—the amount awarded by London Transport to drivers and conductors on their country services. The next meeting of the two sides to discuss the parallel municipal wage claim is due on October 23.

England-to-Scotland Licence Transfer

VEHICLES to be transferred from Birmingham and Glasgow bases to Aberdeen were mentioned when Cameron and Gibbon, Monymusk, sought renewal of two existing A-licences at Aberdeen and for permission to add to their Aberdeen licence five vehicles at present on special A-licences, three based at Birmingham and two in Glasgow. Subject to the application being granted, applicants undertook to surrender the licences for the vehicles based at Birmingham and Glasgow. Mr. Alex Robertson, deputy Scottish area Licensing Authority, said he was convinced that the applicants had established a prima facie case which had not been rebutted by the objectors, but the applicants had committed a variety of offences. They had lost a vehicle under an A-licence in June, 1953, because of their C-hiring activities. Despite this punishment, however, they continued to carry on C-hiring until the end of last year when they converted three of their vehicles which were employed on C-hiring into contract A-licences. In evidence, Mr. Gibbon admitted (1) that he had transferred one of the vehicles with normal user in the counties of Aberdeen, Banff and Kincardine to long-distance haulage; and (2) changed the base to Aberdeen of three special A vehicles based at Birmingham and two special A vehicles based at Glasgow without authority. Mr. Robertson granted a licence for five vehicles and one vehicle for a Monymusk local carrier service. As he had granted only six vehicles instead of the seven applied for, Mr. Robertson said that the effect would be that one of the vehicles based at Aberdeen would be revoked and the licence for one of the Glasgow vehicles would be suspended for six months.

Bus and Coach Developments

M. MacDonald, Berners, Isle of Lewis, applies for the Berners—Stornoway service of D. H. M. MacIver, D. R. and B. McKechnie and N. Cole (W. H. Patch Cream Bus Service), Stamford, seek the licences of Patch and McKechnie trading as Cream Bus Service.

Devon General Omnibus and Touring Co., Limited, has had the special conditions for its Newton Abbot—Dacombes service amended. It may use a 31-seat Albion Nimbus or a vehicle not seating more than 24. Drivers are to be instructed to sound their horns when approaching each sharp bend and to drive with care throughout the journey.

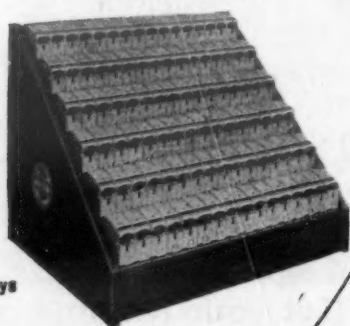
Revisions in London Transport Green Line services on October 15 comprise, apart from withdrawal of certain early morning journeys on summer Sundays, the diversion of 705 (Sevenoaks—Westerham—London—Windsor) between Keston Mark and Bromley South Station via Croydon Road, Five Elms Road, Hayes Lane, Hayes Road and Westmoreland Road to serve Hayes, diversion of 716 and 716A to serve Stevenage New Town Bus Station, and extension of two journeys hourly of 721 to Highwood Hospital, Brentwood.

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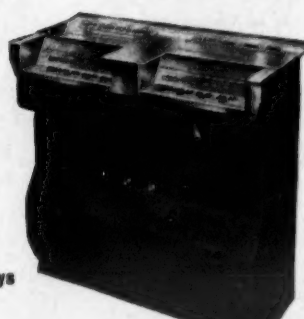
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LONDON MIDLAND MODERNISATION-2*

RAILCARS FROM DERBY

Steel and Light Alloy Units

IT may not be generally realised that the Derby Carriage and Wagon Shops of the London Midland Region of British Railways has between April, 1954, and the 1958 works holiday in July, delivered to traffic no fewer than 625 diesel railcars. Of these over one-third—indeed, 38 per cent—have been of the latest type of light alloy stressed skin

mounted on tubular frames, stoved to tone with the trim. Parcel racks of light alloy anodised in self colour are fitted on the bodysides. Side panelling in the compartments consists of Formica in varying shades, the off-white ceiling panels being of stove enamelled hardboard—melamine finish. Floors are covered with linoleum; carpets being provided additionally in the first-class compartments. The outside door frames are cast in light alloy, panelled



Three-car steel railcar set built at Derby for Western Region

construction. These 239 light alloy cars were built in two batches. The first weigh roundly 27 tons for a power car and 21 tons for a trailer, and their construction and testing was described in our issue of October 22, 1955. The first twin motor car units were equipped with two 125-b.h.p. six-cylinder engines; later twin units consisting of a motor car and a driving trailer were powered by 150-b.h.p. engines, provided by British United Traction.

Later Batches

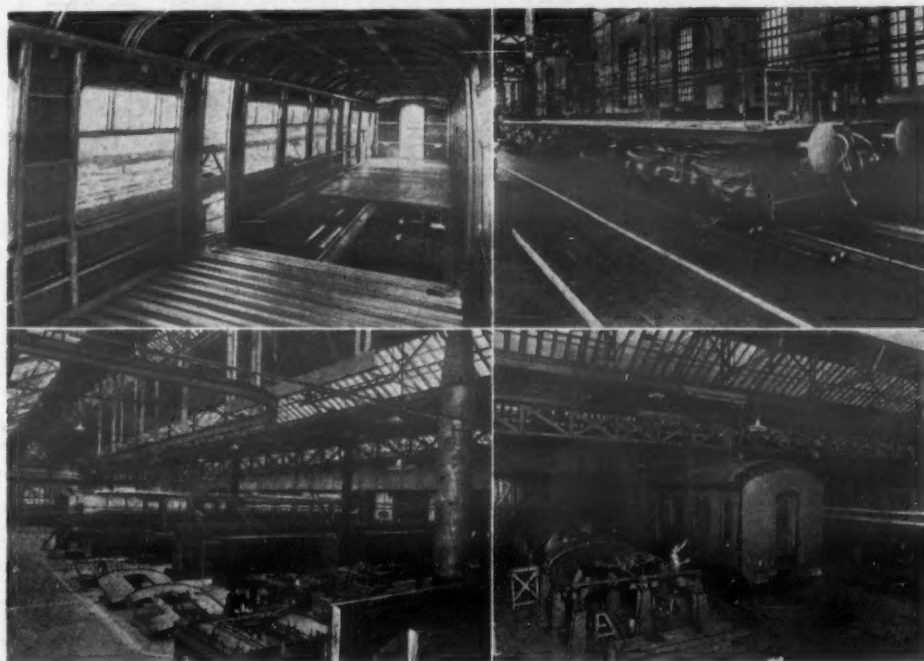
Before the next batch was embarked upon a series of 386 steel cars was started. These have separate underframes and bodies and one of the reasons for using steel construction is that the bodies of 288 of them are for Western Region suburban service with side doors between each pair of seats. These run in three-car trains and each power car has a pair of 150-b.h.p. underfloor B.U.T. engines. The other 98 railcars built for the Eastern Region consist of two-car units of one power and one driving trailer.

More recently a new lot of light alloy cars has been commenced. Stressed skin construction is still employed, involving the weighting of the underframe during erection and the mounting of engine

on the inside in plastics with a wood grain effect and timber surround. They are fitted with full-drop balance windows. To minimise noise from the transmission and track the underside of the plywood floor panels are covered with Durosteel, and the spaces between the exterior and interior panels of the bodyside and roof are filled with Fibreglass slab, tissue faced. The drivers' compartments are plastics lined to match the interior of the adjacent compartments, and extend the full width of the vehicles.

Glass Fibre Roof Domes

The driving compartment roof and ceiling panels are of cold moulded polyester resin reinforced with fibreglass and incorporate a route indicator box. A special workshop has been set up for the production of these items. They are both strong and light in weight. The body and underframe is of similar design for both power cars and trailers, additional framing members being introduced on the power car to permit the additional loading because of the power equipment. The bodyside framing consists of 1-in. thick steel cold-formed sections, arc-welded together to form a complete unit. The bodyside panels are carbon-arc-welded on an automatic machine then arc-stitch-welded to the body framing on a cast-iron skinning jig to minimise distortion



Interior of light alloy car showing integral construction; underframe of steel car for Western Region; below, bodyside and end jigs, with assembly to underframe in background, and, right, roof jig and assembly position

units only after the underframe and complete bodywork have been married up, as distinct from the steel cars where the engine and gearbox are mounted on the underframe in an early stage. The latest alloy cars, however, have steel headstocks and steel reinforcement behind them to take buffing shocks and to cope with minor collision damage, mainly incurred in carriage sidings, which has proved costly on the first series. For the same reason steel rivets are now used as alloy rivets have been found to shear at some distance from the point where the impact of the shock load has been felt, giving rise to later troubles. It is of interest that trials have been made of prototype steel cars with 230-b.h.p. six-cylinder and 238-b.h.p. eight-cylinder engines respectively.

Western Region Steel Units

Each steel unit comprises two power cars with identical driving compartments at the outer ends, enabling operation in either direction, and a trailer car between the power cars. Multiple-unit control enables the train to be marshalled to suit traffic requirements. The tare weight of the three-car unit is 99½ tons, the power cars weighing 35½ tons each and the trailer car 28½ tons. The seating arrangements provide accommodation for 65 second-class passengers in one power car with a brake compartment, 28 first-class and 74 second-class passengers in the trailer cars, and 95 second-class in the other power car. Seats in the second-class compartments are trimmed with maroon moquette, while the seats in the first-class compartment, including head-rolls and armrests, are finished in green moquette. All seats have foam rubber fillings on lace web springs

and buckling of the panelling. The roof framing is built up as a complete assembly of 14 s.w.g. carlines, with continuous longitudinal members. Galvanised roof sheets are 16 s.w.g. secured by plug welding to the framing. All this work is carried out on jigs which enable sides, roof and ends to be prefabricated for erection.

The underframe is of all welded construction carrying drawgear of conventional type and fitted with Oleo hydraulic self-contained side buffers. As the cars are designed to operate on suburban and branch lines they are not fitted with gangways. The bogies are of conventional British Railways swing bolster type fitted with lateral control bolster dampers and have British Timken tapered roller bearing axleboxes.

Power Equipment

The power equipment and controls are supplied by British United Traction, Limited, the diesel engines being of the horizontal type rated at 150 b.h.p. Each engine drives a Wilson epicyclic four-speed gearbox through a fluid flywheel and free-wheel cardan shaft to a main cardan shaft driving a spur bevel gear final drive unit mounted on the inner axle of each power car bogie. Torque reaction is taken by an arm connecting each final drive with the bogie frame. Rubber mountings are incorporated on gearbox and engine suspension. Each engine is fed from a 100-gal. diesel oil fuel tank.

Auxiliary drives to a 150-amp. generator and two Clayton exhaustors are taken from the transmission by vee belts. Compressors producing 13 cu. ft. of air per min. at 1,000 r.p.m. and radiator drives are geared to the engine; the radiators are mounted at the side of the underframe and are driven through

(Continued on page 6)

AT LONDON'S DOCKS...



One of the 400 h.p. locomotives at work in the Tilbury area.



Electric Traction Equipment

As part of their programme of steam-locomotive replacement, the Port of London Authority has ordered from the Yorkshire Engine Company sixteen diesel-electric shunting locomotives (twelve of 400 h.p. and four of 300 h.p.). BTH are responsible for the electric traction equipment including the diesel-generating sets powered by Rolls-Royce engines.

Six 400 h.p. locomotives of the same type have already proved themselves in service with the P.L.A. for over a year.



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* No. 1 appeared October 11.

London Midland Modernisation

(Continued from page 5)

right-angled bevel gearboxes. Exhaust pipes pass along the underframe and up the end of the car to roof level, special insulation and silencing being provided.

Control Equipment

Controls are of the latest type with an electro-pneumatic relay system to enable eight engines (or four power cars) to be driven from one cab. The fundamental principles of the system are:

- Failure of one engine does not involve stoppage of the train.
 - The addition of extra power units does not require any extra skill or attention from the driver.
- The introduction of the freewheel in the transmission ensure mutual independence of the engines. Ease of control is promoted by the following control system features:
- The necessity to change gear is indicated to the driver by means of an engine-speed indicator.
 - Automatic disconnection of the starter circuits when engines have started.
 - Automatic stopping of engine as a result of cooling system failure.

Engine speed control is by electro-pneumatic controller motors operating the final rack and giving four positions in addition to the set position for idling, while the gearbox brake bands are directly actuated by air; no separate motor is required. Final drive spur gear engagement is by direct air-operated dogs. The main battery switch is fitted behind the driver's seat and switches the feed from car battery on to train control circuit and thus make supply available to driver's control desk.

Interlocks

A gear reverser controller is fitted to the control desk at the right-hand side. The reverser control has a removable handle and this must be inserted and "Forward" or "Reverse" selected before any controls become operative. This controller is also mechanically interlocked with the gear controller,

a five-position controller selecting neutral or one of four gears. The gear controller handle cannot be moved until direction has been selected, and reverse control cannot be moved unless gear control is in neutral. A three-contact switch on the control panel indicates full drive engagement.

The engine speed controller (with deadman's handle) is a five-position controller, controlling the engine speed over the range 400-1,800 r.p.m. When the handle is released the engines are returned to idling speed, the gears to neutral, and after a five second delay the brakes are applied to bring the train to a standstill. A battery master switch is fitted in the main electrical junction box on the underframe, isolating all circuits except battery charging and fire alarm. Another switch isolates starter circuits except battery charging and fire alarm for safety during maintenance. P.V.C. wiring is carried in troughing and conduit.

Fire Extinguishing Equipment

In addition to the various control gauges, Gravier fire-extinguishing equipment is installed over the engine units in the form of a spray system, electrically controlled. In the event of fire the engines are stopped, a warning light appears at the fire control relay box on the underframe, and a bell rings in the driver's compartment. This may be stopped from a switch on the fire control relay box, but, if the fire restarts, a thermostat remakes the circuit to give further warning.

Brakes are of the Gresham and Craven quick-release type, and includes 22 in. and 18 in. cylinders fitted on the power cars and trailer car, respectively. The quick-release system consists of: the exhaustor (belt-driven from the transmission) having a capacity of at least 70 c.f.m. at full speed and capable of attaining 28 in. of mercury vacuum against a closed circuit; a high vacuum release chamber; a feed valve; a two-pipe driver's brake valve; a standard vacuum brake cylinder; and an automatic

isolating valve. The feed valve is to prevent the train pipe vacuum exceeding 21 in. and then isolate the exhaustor from the system, the exhaustor then creates its maximum vacuum of about 28 in. of mercury in the release chamber giving storage capacity for subsequent brake releases. The automatic isolating valve is to prevent the vacuum in the release chamber falling below 19 in. of mercury.

The driver's valve passes through a "lap" position on moving the handle towards brake application; this isolates the feed valve and exhaustor before air is admitted to the train pipe—thus retaining the high vacuum condition in the release chamber. With the brake valve in the "on" position, air is admitted direct to the cylinder to apply the brake and the high vacuum is still preserved in the release chamber. With the brake in the normal "quick-release" position the automatic isolating valve is normally open.

Effect of Release Chamber

The driver's brake valve now links the train pipe with the release chamber through the feed valve which opens to its full extent due to loss of vacuum above its diaphragm. Air from below the vacuum brake piston and train pipe flows rapidly through the feed valve into the release chamber and is absorbed. Immediately 21 in. is reached on the train pipe side of the feed valve it closes as before. Thus the speed at which the exhaustor is running does not affect the speed of the brake release which is entirely dependent on the release chamber. A full brake application can be made in a few seconds even though the main engine and exhaustor are at idling speed. The driver's valve remains in this quick-release or "off" position and full release vacuum is recreated in the release chamber when the car is again in motion and the exhaustor running at its full capacity. If the vacuum in the release chamber falls below 19 in. the automatic isolating valve closes on brake release and the air is withdrawn from the underside of the brake cylinder by the exhaustor, the system functioning in the same way as an orthodox vacuum brake arrangement. Brake valves are provided in the guards' and drivers' compartments; a handbrake wheel is fitted in each cab.

All cars are fitted with two Smith's oil-burning

air heaters, fed with diesel fuel oil from a separate 15-gal. storage tank. These heaters consist of a combustion unit which supplies hot gases to a heat exchanger and an air fan which propels the air to be heated over the heat exchanger and to the distributing ducting. Each heater is operated on an independent system, one providing recirculating air, the other taking fresh air, from the outside.

Either can be used to circulate unheated air, and both have an Ozonair filter between the air intake and heater. The heated air is carried by means of underfloor ducts with outlets suitably spaced below the seats. Demisting and defrosting of the driver's screens is by means of a fan and flap valve to bleed heated air from the ducting to mix with air from a grille at the front of the cab.

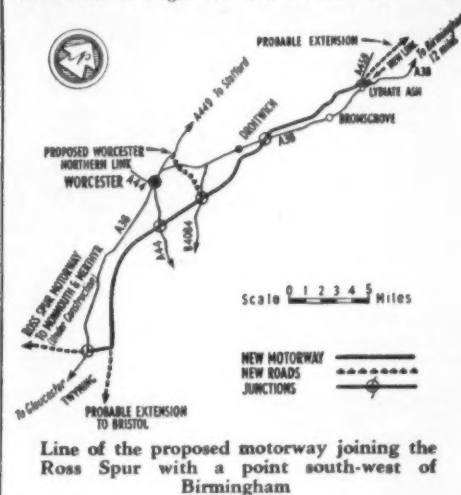
Electric Lighting

Lighting in the compartments is by means of 24-volt 60-watt lamps, power being supplied by a Stones 150-amp. Tonum light generator. Accumulators are of the standard British Railways Az type; the battery being of the lead acid type having 440 amp.-hr. capacity. Electric marker lights are provided at the outer ends of the motor cars. Electric bells provide communication between the guard and driver. A Smith-Stone speed indicator is fitted to the bogie adjacent to the driver's cab, in addition to a Smith-Stone distance counter fitted on one axlebox of the inner bogie on the power car.

PROGRESS ON THE ROSS SPUR

And a Link with the Midlands

LAST week Mr. Harold Watkinson, the Minister of Transport, undertook a 350-mile tour of the West Midlands and the North-West, during which he saw work in progress on road schemes costing £22 million. On Tuesday he inspected progress on the Ross By-pass and the 20-mile Ross Spur motorway (MODERN TRANSPORT, January 18) which, within the next two years will be carrying much of the traffic on the route between Birmingham and South Wales. As already recorded, the draft order for a 29-mile section of motorway linking the Ross Spur with a point near Birmingham (see map) has now been published. From Ross-on-Wye he drove to Northwich to begin his tour of the North-West.



inspecting work on the Northwich By-pass, the Runcorn-Widnes Bridge, and the Stretford-Eccles By-pass, including the new Barton Bridge and the Preston and Lancaster by-passes.

Bridstow Bridge

On the Ross By-pass the Minister saw work on the 353-ft. Bridstow Bridge over the River Wye and the connecting embankment, 2,000 ft. long. The foundations of the flood arches on the east bank are complete, and work on the foundations of the abutments and piers of the bridge is well advanced. The neighbouring bridge over the Ross—Hereford railway line is at deck level and should be completed by the end of November.

Contracts for 12½ miles of the 22-mile motorway, let recently, are of particular interest, as subsoil stabilised with cement is being used to save materials and transport. This method has never before been tried in this country for road construction on anything approaching such a scale. At the eastern (Gloucestershire) end of the motorway, the work is largely structural and considerable progress has been made in putting in the foundations of the Queenhill Bridge and viaduct over the River Severn valley. The bridge, with approach viaducts, will be the largest road bridge so far built over the Severn. This motorway is due for completion by the end of 1960.

Meriden By-pass Inaugurated

On Tuesday last, the Minister unveiled a plaque to commemorate the completion of the five-mile-long Meriden By-pass, which forms part of the approaches to Birmingham from the London-Birmingham Motorway. This £600,000 road, which has two twin-lane carriageways, was opened to traffic last month, four months ahead of schedule. The scheme has been carried out for the Ministry by Tarmac Civil Engineering, Limited, to the design of Mr. David Watson, county surveyor of Warwickshire County Council.

PUBLICATIONS RECEIVED

TORSION BARS. An extremely interesting and informative brochure published by English Steel Corporation, Limited, River Don Works, Sheffield, 9, from whom copies can be obtained by potential users. After brief introductory notes the applications and manufacture of various types of torsion bars are described, followed by detailed design data.

CALIBRATED FILTRATION. A new brochure from Rollumit (London), Limited, Chandos House, Palmer Street, London, S.W.1, describing the design features and applications of Rollumit filters for every type of fuel, oil, chemical liquids, water and air using Fipoca elements of calibrated porosity down to 1 micron.

PROGRESS IN LUBRICATION. A new booklet by Alexander Duckham and Co., Limited, Thames Wharf, Hammersmith, London, W.6, presenting a record of the company's activities over the past few years. Technological developments outlined include radioactive studies of cutting tool wear, the engine test laboratory where multigrade lubricating oils were pioneered and the industrial cleansing and preservative systems which now form an important part of the company's business.

TRANSMISSION TIMES. A promising start has been made with the first issue of the new house journal of Self-Changing Gears, Limited, Lythalls Lane, Coventry, under the above title. Mr. K. Montrose, its editor, has assembled a well-assorted collection of facts, news items and pictures of S.C.G. equipment applied in a variety of ways, as well as information on the transmission equipment itself, underlining the universal acceptance of the products of the Coventry factory. The magazine is to be published quarterly henceforth.



Sign on back of North Western Road Car Co. Limited coach made from 'Perspex' acrylic sheet by Comprax Plastics Ltd.

The sign on this bus is a 'Perspex' sign

A 'PERSPEX' SIGN made by Comprax Plastics Ltd. was chosen by the North Western Road Car Co. Limited for the rear of coaches. That's because the sign is so clear and easy to read, even from some distance away. The sign is made from 'Perspex' acrylic sheet. 'Perspex' is a wonderful traveller: it is unaffected by inclement weather and by atmospheric changes. It's attractive, too, and remains attractive and easily read for many, many years.

'Perspex' is easily cleaned and maintained. It is strong, lightweight and shatter-proof. 'Perspex' signs can be internally illuminated to ensure round-the-clock visibility. Designers enjoy using 'Perspex'. It can be heat shaped and it offers them a wide choice of colours—transparent, translucent and opaque colours—as well as clear and opal sheet.

PERSPEX

"Perspex" is the registered trade mark for the acrylic sheet manufactured by I.C.I.

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KNOWLEDGE OF BUS LOADINGS

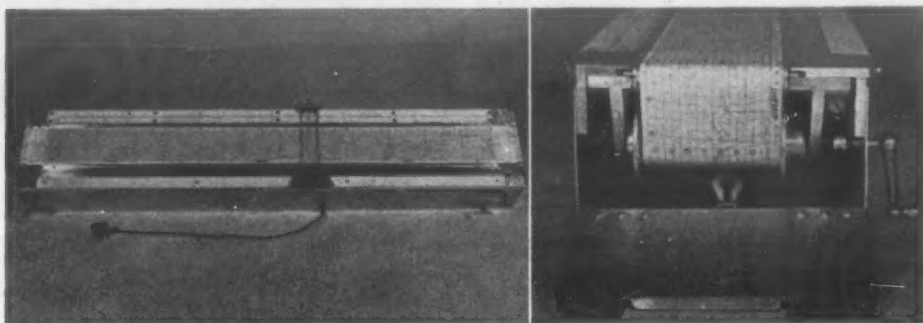
Use of West Yorkshire Loadmeter

By H. N. TUFF, M.I.Mech.E., M.Inst.T., Director and General Manager, West Yorkshire Road Car Co., Limited

THERE has always been a desire for fuller knowledge by bus operators of what is happening on the road in respect of loadings, and while cash taken has always been a guide and the knowledge of peaks an essential part of the information in the traffic department, nevertheless there were many gaps. In prewar days, when things were more leisurely,

object is to obtain a "bank" of information, so that on future occasions when we want knowledge of a route by suitable documentation we can have it.

So far as reliability is concerned, our first vehicle and instrument has been in operation for over 10 months with no difficulty with the instrument at all, and this speaks well for the robustness of the design and the flexibility of the mounting. It will



Two views of the scanning apparatus for interpreting Loadmeter charts

the management was able to obtain analyses of waybills to find out the stages on which the money was being taken. The need for information then was not so great; fare increases were not contemplated and costs were low. While economy has always been the desideratum of all efficient companies, the conditions then did not call for such a close examination of unprofitable routes or journeys as today.

How to Obtain Statistics

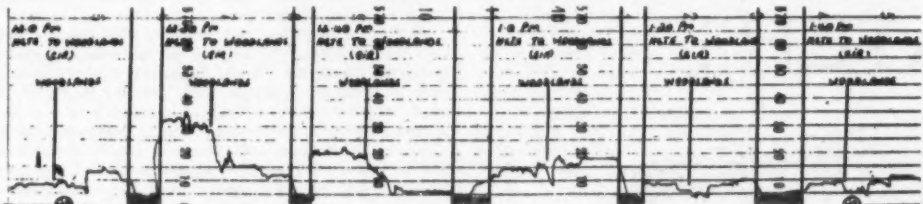
Today it has become necessary to have a fast issuing ticket machine, and the completion of waybills, other than the barest information, is often difficult during peak hours. If there is no audit roll on the ticket machine an analysis is extremely difficult and, indeed, where audit rolls are available the extraction of information can be tedious and costly. Certainly in this company all statistics from the waybills, etc., have been bedevilled by the

probably take two or three years of usage really to have a true picture of the routes and accurate documentation to enable the traffic officials to locate these records quite quickly.

Use of Equipment

A simple example of the use of the machine is to determine whether or not a double-decker is required as compared with a single-decker, or whether or not a 70-seater is necessary and for how long. This information is simply obtained by rolling a rotameter at the maximum loading position on the graph, and measuring the amount of time that a vehicle requires a greater seating capacity than that of the standard single-deck or 60-seat double-decker. These results are indeed surprising.

When these machines have been in operation for a long period I feel that new techniques will develop, and that its possession will place the traffic man in a strong position of knowing what really



A simple diagram on the Woodlands-Harrogate circular route

incidence of return fares and contract tickets which are used on certain routes in great numbers. The sending of observers on the road to measure loadings can be costly, and we examined the various methods of obtaining these statistics by the cheapest process.

The first method was to get loadings photographically, and this proved effective only in the summer. The identification of points en route called for some knowledge, so that ultimately a clock was mounted in order that a picture could be taken every time the bell rang. The co-ordination of a picture on the top deck with one on the bottom deck proved again a long and tedious process.

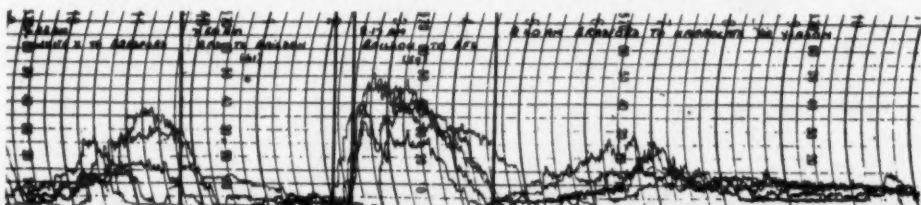
Recording Ammeters

The next step was to consider an electric contact on the seat which would, by some means, record on a drum the fact that the seat was occupied and, in order to reduce the cost of designing a machine,

is happening without the tedious work which has had to be carried out in the past. A recent example of the economy in the use of this machine compared with the method of having a staff of observers on the road can be gauged by the following case. We required a complete week's survey of a number of vehicles on a route which would have cost us in labour approximately £230, and this is before the figures were collated. With the Loadmeter some two to three hours in editing the rolls was all that was required, and I should add here the information was presented and accepted by the Yorkshire Traffic Court as evidence of loadings.

Recording and Interpretation

After our initial trials on special routes where we were seeking information, we have now arrived at a basis for recording. Generally speaking our Monday to Friday traffic is the traffic with which we are most concerned, and we record five days operating over each other, so that we have a pattern



Five-day charts overlaid on one another on a series of busy morning journeys between White Cross and Bradford, Bradford and Baildon and back and Bradford-Harrogate via Yeadon

to find something already available. One's mind immediately turned to recording ammeters which are generally used on power plants, but we discovered that a recording ammeter was being manufactured which had been used in tanks for military purposes. This machine is robust, and in every way adaptable to installation in a vehicle. The cost was not unreasonable in respect of equipment and material. It was necessary to carry out a small modification to the recording ammeter to prevent the pen bounding off the paper roll under conditions of high vibration.

Arrangements were made to place a load of one milliamp for every seat occupied, and the micro switches are mounted under the seat, requiring a pressure of some 5 to 6 lb. to depress the switch. It is, of course, necessary to screw all seats down to avoid the inquisitive eyes of both staff and public alike; also to prevent our working on the base line, a constant load of 3 milliamps is applied, so that all the loadings we take from the graph are minus 3. We called the device the Loadmeter.

Ten Fitted Buses

In this undertaking six double-deck vehicles have been converted to take the Loadmeter, and four single-deckers. Only six instruments are employed, and these can be fitted at will to either single- or double-deck vehicles. Generally speaking, on many of our provincial routes six buses will cover the whole service, but where this is not so we should take a second week's reading. Our

for every journey of the day. Originally our intention was to take the recordings in five colours; we no longer think this is necessary, but we can reinsert the roll into the machine at a later date, and trace with another colour a further set of a week's readings, superimposed on the five days which are already recorded.

Changes in Trends

This will show us changes in trends either of season or year. Where desired the average number of passengers can be recorded by using a planimeter to measure each journey, and we have in fact done this. Where fares are on a basic rate per mile, it will be possible, provided contract tickets and reduced rate return tickets are not employed, to approximate the amount of money which should be taken for that journey. This has proved ineffective in this company because all our fares are on a tapered curve. We have contract tickets, children's tickets, dog's tickets, parcels and other items which would confuse the position, but the average number of passengers is quite useful. The figure of average passengers per journey is obtained by using a planimeter, and where an undertaking has a punch card system this information can be included for later extraction to obtain broader pictures of traffic flow.

It is necessary to edit the roll, which we do on a frame illuminated from the back and calibrated on the front on a clear time scale, commensurate

(Continued on page 8)

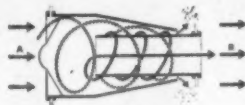


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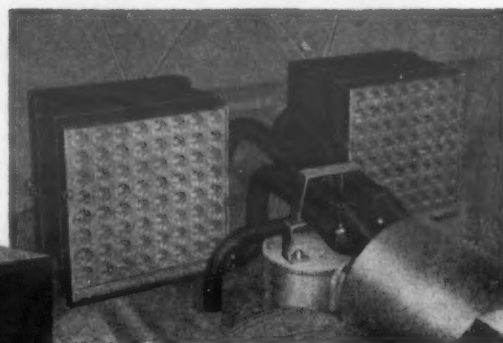


YOU CAN BE SURE OF SHELL

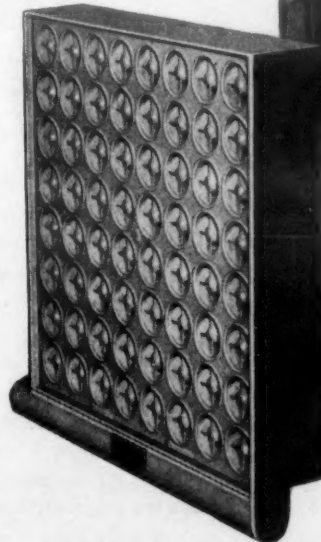


Rotonamic air filters for DIESELS

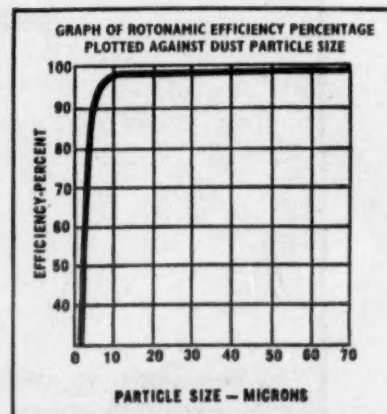
Static helical blades in the ROTONAMIC air filter give a whirling motion to the air as it enters at A. Still keeping to a helical path, the air is then induced to reverse direction, centrifuging the solids out of suspension before 90% of it is fed to the engine B. The other 10% is aspirated away with the removed solids through the tube at the base of the panel.



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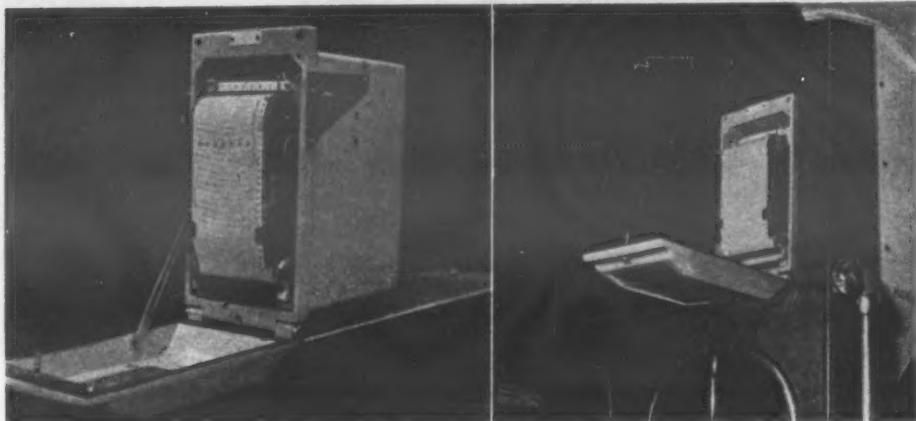
Knowledge of Bus Loadings

(Continued from page 7)

with the time scale on the graph. This is the only part of the arrangement which literally has to be done by hand, but once a graph has been taken a copy can be made and circulated to the officials who are concerned with the particular route.

The top scale on the scanner is a time scale, and

the example it will be noted that the 12 o'clock run from Woodlands to Harrogate has extremely light traffic, but on the run from Harrogate to Woodlands it rises sharply. The thin line, as just before the commencement of the 12.20 and 1 p.m. runs indicates people taking their seats on the bus,



The loadmeter apparatus and, right, mounted in a West Yorkshire single-deck bus

the cursor is marked to the radius of the axis on the graph. The short piece of flex shown in the photograph indicates the lighting for illumination from the back. A photograph is included showing the Loadmeter and one of the scanners, and in addition there are two graphs. The first one is a simple single-line graph of a single-deck route. The vertical line shows the seating capacity, and in

but as the vehicle is operating the line becomes thicker, due to minor vibrations. The hatching at the bottom indicates standing time.

On a Double-deck Route

The second illustration is a double-deck route Monday to Friday with the five days laid over each other. It will be noted that there is a 7.23 journey

from White Cross to Bradford; a 7.50 from Bradford to Baildon; an 8.17 from Baildon to Bradford, and an 8.40 Bradford to Harrogate via Yeadon. It will also be noted that there are substantial variations from day to day, but nevertheless one is concerned with the pattern of the whole week. For example, White Cross to Bradford at that time in the morning is a reasonably busy run, but the traffic in the reverse direction is negligible as the vehicle is going against the general flow of traffic, particularly in the last few miles, when the vehicle picks up at Baildon and its environs, and becomes busy.

It will be noted that on one day the vehicle was late arriving at Bradford. At 8.40 the journey from Bradford to Harrogate via Yeadon indicates that a double-decker is really unnecessary on this journey, although it had been the custom in linking duties to include the vehicle. Naturally steps will be taken here to operate the run with a single-decker, thereby saving the difference in fuel costs in the operating of the two types of machine.

Ascertaining Duplication Needs

The two graphs are but simple examples of the work of which the Loadmeter is capable, and when a "bank" is formed of all the information, then the general flow at different times of the day to and from towns can be extracted. The need for duplication and the extent in distance of duplication is another factor which we can deal with, and also the loading over common portions of road by vehicles operating on different services. It is hoped that this device will prove of general benefit to the industry, increasing the knowledge of traffic operations.

The application of the instrument could be extended and engineers wishing to make investigations into gearbox and clutch usage on routes may do so by coupling different current loadings to each of the speeds and one to the clutch for accurate measurement. The machine could also be used to measure average mean gradients by a suitably designed inclinometer where such information is desirable for true route comparisons.

The writer expresses to Mr. F. P. Arnold, chairman of West Yorkshire Road Car Co., Limited, his appreciation of the permission given to publish this article.

MODIFIED BANTAM

New Use for B.O.G. Machine

AT the West Hartlepool dockyard of William Gray and Co., Limited, a Bantam cutting machine supplied by British Oxygen Gases, Limited, has been modified to produce "lazy" or shallow chamfers on the tank top bed plates which support a ship's engine. By the use of an extra rack and pinion, the cutter can be positioned to



B.O.G. Bantam cutting machine used to produce shallow chamfers on thick plate

give a one-in-five angle of cut. A plate measuring 10 ft. 6 in. by 4 ft. and 1½ in. in thickness can be chamfered for butt welding on to the ¼-in. plate which forms the rest of the tank. For this application, the machine is worked in reverse so that it travels away from the heat of the cut.

The depth of cut is 4 in. and the cutting speed achieved is approximately 6 in. per min. Weights are used to counterbalance the modified cutter arrangement. The modified Bantam has been in use at the dockyard for the past two years.

DOLLAR IMPORTS

Many Items Freed from Control

LIBERALISATION of imports from the dollar area announced in Montreal on September 17 by Sir David Eccles, President of the Board of Trade, means that many items of machinery, covering broadly industrial, agricultural and office equipment, previously subject to specific licensing, can now be freely imported. Giving effect to these provisions, the Open General Licence (No. 2) has been amended and copies of the amendment, which is Amendment No. 1 to the Open General Licence (No. 2), listing the items so freed, can be obtained from H.M. Stationery Office and branches, price 6d. (8d. by post).

Although normal road vehicles still remain subject to specific licensing, as do oil refining plant, gas and chemical plant, scientific and industrial instruments and pumps and valves, many items of interest to the transport industry are freed. These include batteries and battery-making machinery; carbon and welding electrodes; wires, cables and terminals; agricultural machinery; vehicle-washing machines; road or rail vehicle-mounted cranes; many items of electrical machinery other than of a kind used in transport vehicles; hydraulic machinery; degreasing plant; all kinds of construction equipment, including bulldozers, scrapers, excavators, dumpers, loading shovels, snow ploughs and the like; railway signalling equipment; ball and roller bearings; steam engines and gas, steam and water turbines; steel transmission chains; road-making plant; refuse disposal units; engineers' tools, excluding diamond dies; farm and water carts and wagons; railway wagon shunting machines; tracklaying and wheeled tractors and parts thereof; and industrial trucks.

NEW BUS SHELTER

Attractive Normid Unit

SOME of the advantages of aluminium as a roofing material are illustrated in the range of C.o.I.D.-approved unit-system bus shelters manufactured by the North Midlands Engineering Co., Limited, Skegby, Sutton-in-Ashfield, Notts. The shelters were designed by Mr. D. R. Mellor largely with an eye to appearance, though durability and ease of erection were also important considerations. Two types of shelter are available—an open type for city use and a more closed-in type for rural areas. The parts are supplied ready for assembly, steel components being hot dip-galvanised and painted to customers' specifications. Painted steel supports, kick panels and roof



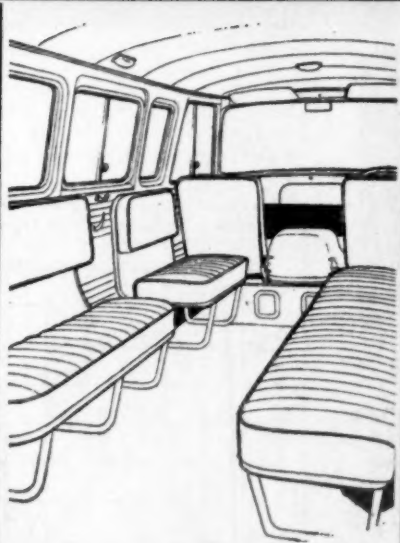
One of the attractive Normid roadside shelters at the city of New Sarum, Salisbury

brackets are employed, the glazing usually being ½-in. plate Georgian-wired glass or ¾-in. armoured glass. The roof is Noral 20 s.w.g. aluminium industrial sheet supplied by Northern Aluminium Co., Limited. Originally, a fibrous material was specified for the roof, but trouble was experienced with breakage in transit, and so aluminium was tried. This has not only eliminated breakage, but provides a much more attractive appearance. It can be left unpainted, thus minimising the amount of work involved when the shelter needs repainting. Another advantage is that aluminium's strength and light weight have eliminated handling problems and have helped to render prepared foundations unnecessary, holes 2 ft. deep for supports surrounded by concrete being adequate.

NEW

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Big 'rectangular' body allows super-practical seat layout... no 'backs-to-the-driver' passengers... more-than-ample room for the longest legs and the tallest heads!

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THAMES '12 SEATER'

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IMPROVED SIGNALLING AT WATFORD L.T.E.

Programme Machines for Automatic Working

CHAIRLOCK TYPE OF POINT LAYOUT

MECHANICAL signalling at Watford Station on the London Transport Metropolitan Line has been replaced by a new entirely power-operated installation, and signalling at Watford is now automatically operated by programme machines, the first to be used on a surface line by London Transport. One sequence and one time machine are employed; together they carry out the following routing of trains: the reversal of trains of multiple-unit stock in either platform and their dispatch at the correct departure times; the automatic setting of routes to run the locomotive of a locomotive-hauled train round its train before dispatching it at the correct time; the preparations for the morning service when trains are shunted from the electrified sidings to the running line and then reversed into the platform and dispatched at the correct time; the routing of trains at night and in off-peak periods from the platforms to the appropriate sidings.

In order to deal with any special circumstance outside the normal timetable working at Watford

reversal of trains without regard to timetable operation are provided at Watford. Under this system, the first train to arrive at Watford will be the first to leave, the starting signal being automatically cleared for a train to depart as soon as the platform stop has exceeded 4 min.

Goods Yard Working

There are thus three possible methods of operating the signalling at Watford: programme machine working (normal); automatic reversal; by push-button from Rickmansworth. All signals and points are controlled from shafts in a 36-shaft interlocking machine housed in a new fireproof building between the running lines at the south end of the station. The interlocking machine is provided with mechanical interlocking and with contacts for the control of the signalling circuits. Each shaft is equipped with air cylinders and electro-magnets which will be energised by the remote control circuits—programme machines, automatic reversal operation, or by push buttons from Rickmansworth. Sealed



Exterior of the new building at Watford (Metropolitan Line) which houses the programme machines, interlocking machine, and relay racks; right, one of the chairlock type of point layouts showing the electro-pneumatically operated ground tracklock mechanism

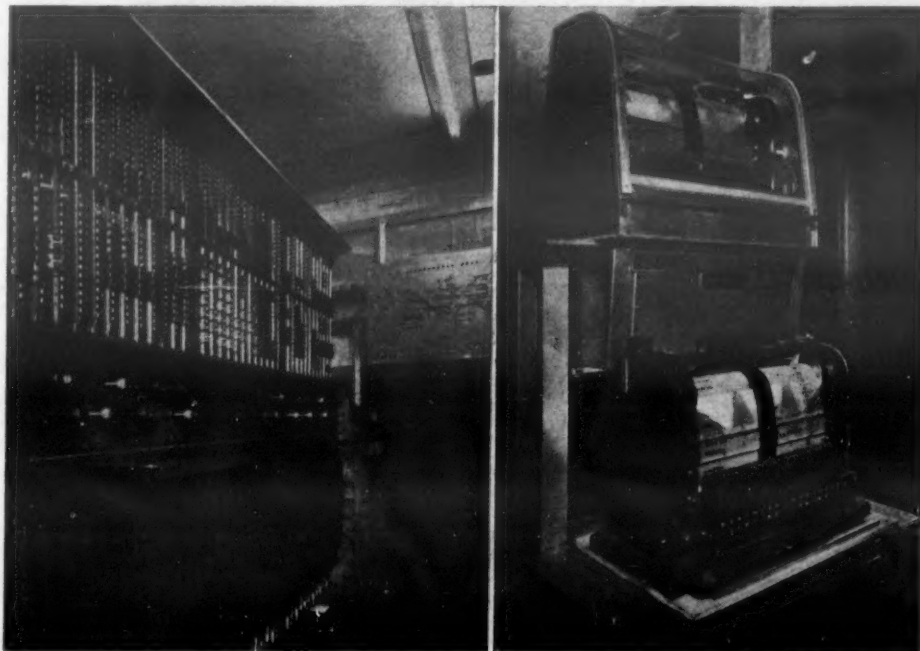
the signalman at Rickmansworth, who supervises the working at Watford, is provided with a control panel and has push buttons so that he can route trains at Watford manually should this be necessary. Normally, the programme machines carry out all movements automatically. Although the programme machines have paths for freight trains included in their programme they do not actually set the routes for these trains. They are signalled by push button from Rickmansworth, the programme machines merely warning the Rickmansworth signalman, by sounding an audible warning in his box, that the trains are ready to proceed.

The programme machines carry a plastic roll on which is typed the details of each train passing over the section of line in sequence. These details are an exact reproduction of the timetable information and include the destination of the train, the train number, and its time. Between the rows of typing, holes are punched in the plastic roll which interpret the information contained in the typescript. Electrical contacts are actuated through these holes to control the signalling equipment. Each train that passes causes the roll to step forward so that the electrical contacts read the next required train operation. The carriage containing the plastic roll

relays of the telephone type are used for the non-safety circuits operating the interlocking machine shafts.

One shaft in the interlocking machine, controlled from a two-position key in Rickmansworth signal-box, is provided for the purpose of isolating the goods yard working, enabling the shunter to set points by hand for shunting purposes without interference with the general station working. In the box at Rickmansworth, a push button is provided for the control of each signalled route at Watford if required during a disorganisation of the service or in exceptional circumstances. The push buttons are of the now standard L.T.E. type which are capable of being illuminated green, yellow or red to show whether the signals are clear, or that the route has been preselected, or that the signals are at danger.

An illuminated diagram shows all track circuits in the Watford area together with signal and point indications. The controls and indications between Watford and Rickmansworth are carried in a 217-core cable of the type developed by London Transport with conductors 0.01 in. in diameter and a copper screen around the whole of the cores. The circuits are fed at 100 volt d.c. with sealed



The 36-shaft interlocking machine installed at Watford—the track diagram is mounted on the wall on the right; the programme machine installation with the sequence machine mounted above the time machine, on which one of the plastic rolls can be seen as well as the row of electrical contacts

in the programme machine can easily be inserted into or removed from the machine so that a different programme roll can be used for weekday, Saturday or Sunday working.

Control from Rickmansworth

The layout at Watford consists of an island platform with two platform roads, two adjacent electrified sidings outside the platform roads, and a goods yard. The resignalling work involved the abolition of the mechanical locking frame used previously and the conversion of mechanical signals and points to power operation. The Watford Station working is now supervised from the signal-box at Rickmansworth, three miles away, and the signalbox at Watford has been taken out of commission.

Keys are provided in the Rickmansworth control panel to allow the signalman to "step" the programme machine to the next train position in the event of a train being cancelled, and to allow the departure path associated with that train to be cancelled. Another key will prevent the programme machine from stepping so that an extra train can be handled at Watford without the programme machine getting out of sequence. The extra train must be signalled in and out of Watford under either push button or automatic reversal control as described below. Apart from programme machine working, facilities for the automatic

telephone-type relays at the end of each circuit. Running signals are of the two-aspect colour-light type and shunt signals of the externally illuminated disc type. Junction indicators are provided in accordance with standard L.T.E. practice. Electro-pneumatically operated trainstops are provided at all running signals and certain shunt signals.

Chairlock Point Layout

For the first time on an appreciable scale on London Transport installations, the points will be controlled by the chairlock type of point layout similar to that employed by the French National Railways but modified and developed to London Transport requirements. The modifications include the provision of an electro-pneumatically operated ground tracklock which is provided on facing points over which passenger trains operate and a detector which separately detects each switch and the ground tracklock in the locked position. An experimental point lock of this type has been in use at the eastern end of Earls Court Station (District Line) since 1954.

This is the first time that the production model of this modified chairlock has been used, and it is applied to 12 pairs of points at Watford. Its essential feature is that the closed tongue of the points is held firmly clutched to the stock rail when locked. In France, it is used by the S.N.C.F. on

(Continued on page 18)

CRAVEN

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for
BRITISH RAILWAYS



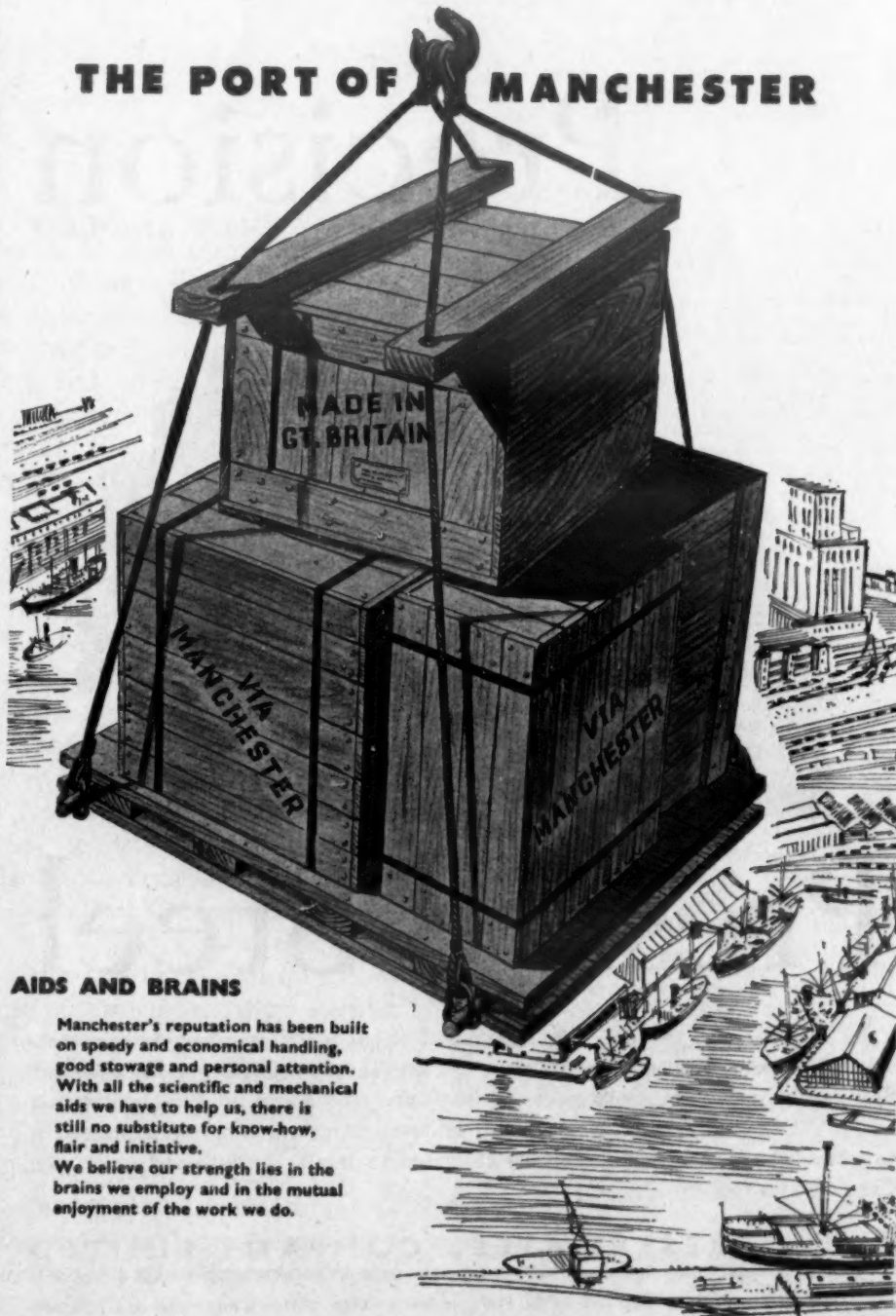
Second class saloon looking forward into drivers compartment.

Included amongst orders received for over 400 Diesel Railcars for The British Transport Commission's Modernisation Programme are a number of triple car units one of which is illustrated here.

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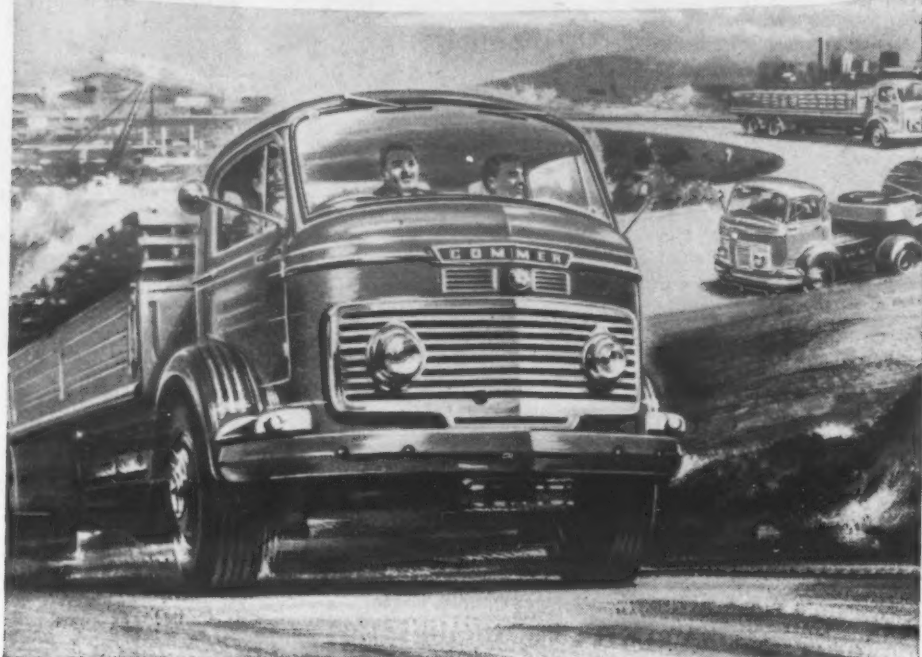
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NEWS FROM ALL QUARTERS

Improvement to A38 Road

Work will start shortly on the doubling of three miles of the Exeter-Leeds trunk road (A38) between Streethay, near Lichfield, and Alrewas.

R.C.T.S. on Television

A controversial B.B.C. television programme series, *Lion's Den*, on October 24 will present Brigadier T. I. Lloyd, who believes that all railways should be turned into roads, defending himself against members of the West Riding branch of the Railway Correspondence and Travel Society. The programme is due to commence at 10.15 p.m.

Rhodesia Railways Takeover Discussions

Official talks between Rhodesia Railways and South African Railways concerning the proposed takeover by the former of train operation on the 580 miles of line between Bulawayo and Vryburg were held last week. The takeover from S.A.R. would benefit employment in the Rhodesias, which are currently suffering trade depression. The British Government would require to be consulted since most of the route is through the Bechuanaland Protectorate.

Hamburg Underground Stations

As part of the plan to link all parts of the inner commercial and shopping districts of Hamburg by underground, a pedestrian subway with shops and kiosks has been opened between the former Jungfernstieg and Rathausmarkt stations. Both stations have now been renamed Rathaus, and are considered as one. Jungfernstieg was the terminal station of the Ochsenzoll line, which goes into the extreme outer suburbs of the city, and Rathausmarkt a station on the Barmbek Ring line.

Loan for Small Swiss Railways

The Swiss Government has announced that, as a result of a petition laid before it by sections of the country's transport industry, it will allow a 10-year loan to certain railway and road transport systems in Switzerland other than the federal railways. The loan will be one of about £10 million of which a half will be for technical improvements and half for maintenance purposes. At a conference last month (see MODERN TRANSPORT last week) the various railways outside the Swiss Federal Railways framework complained of their financial position and outlook for the future.

Urban Motorway Study Groups

Urban road study groups are to be set up in the larger cities to plan new roads in built-up areas that will be complementary to the fast intercity motorways, the Minister of Transport announced last week. The aim is basically to prevent new motorways from beginning and ending in traffic bottlenecks. Mr. Watkinson envisaged that each group would include representatives of the local authority, business interests, and the Ministry, and would have the technical assistance of a road traffic engineer. He expressed the view that two-level roads or subterranean routes would suit British cities rather than completely new expressways.

Immortal Trolleybus

Trolleybus No. 260, operated from Stonebridge depot, has been chosen by London Transport to represent its trolleybus system in the proposed B.T.C. museum. This is a class C2 1935 A.E.C. chassis with English Electric traction equipment and M.C.W. bodywork. It will be withdrawn from service during the next 12 months.

Repair Shop for Diesel Locomotives

A new diesel locomotive examination and repair shop and an oil fuelling installation is under construction at Rugby locomotive depot (London Midland Region) to facilitate speedier servicing and refuelling of the 13 diesel-electric locomotives based on the depot. Twelve shunters are used on scheduled duties at Northampton, Coventry and Nuneaton as well as Rugby itself; one mixed traffic diesel works between Birmingham, Rugby and Peterborough.

British Pavilion Sold

On behalf of the Federation of British Industries George Cohen Sons and Co., Limited, has sold the British Industry Pavilion at the Brussels International Exhibition. George Cohen handled the majority of the Festival of Britain exhibition buildings on the South Bank Site. The floor area of the pavilion at Brussels is 60,000 sq. ft., and the building is completely clad with curtain walls of special polished plate glass. It will be re-erected at Hilversum, Netherlands, as a sports hall and may also be used for big congresses in Hilversum. It should accommodate some 3,000 people.

Summer Time Appeal

The British Travel and Holidays Association is to make further representations to the Government advocating the extension of British Summer Time to the last weekend in October. The Association considers that the extra hour of daylight thus gained would benefit the community as a whole. In particular, the proposed extension would help in the campaign to extend the present holiday season. After the war, and until 1952, Summer Time continued until the last weekend of October, but in 1953 it reverted to the period defined in an Act of Parliament of 1916, when Summer Time was introduced.

St. Pancras Basin for Pleasure Boats

The new yacht basin at St. Pancras, opened last week by Sir Reginald Kerr, general manager of British Transport Waterways, is designed to give permanent mooring facilities for the increasing number of people using the canals and inland waterways for pleasure boating. It is the first of a number of yacht harbours which British Waterways hopes to provide throughout its system of inland waterways. The St. Pancras Yacht Basin, with easy access to the Grand Union Canal, is about 250 ft. long by 100 ft. wide, and has been dredged to provide accommodation for some 60 vessels of up to 44 ft. draught. Wooden cat-walks have been erected around the white-painted sides of the basin, vessels mooring stern-on to the cat-walks with other moorings off-shore.

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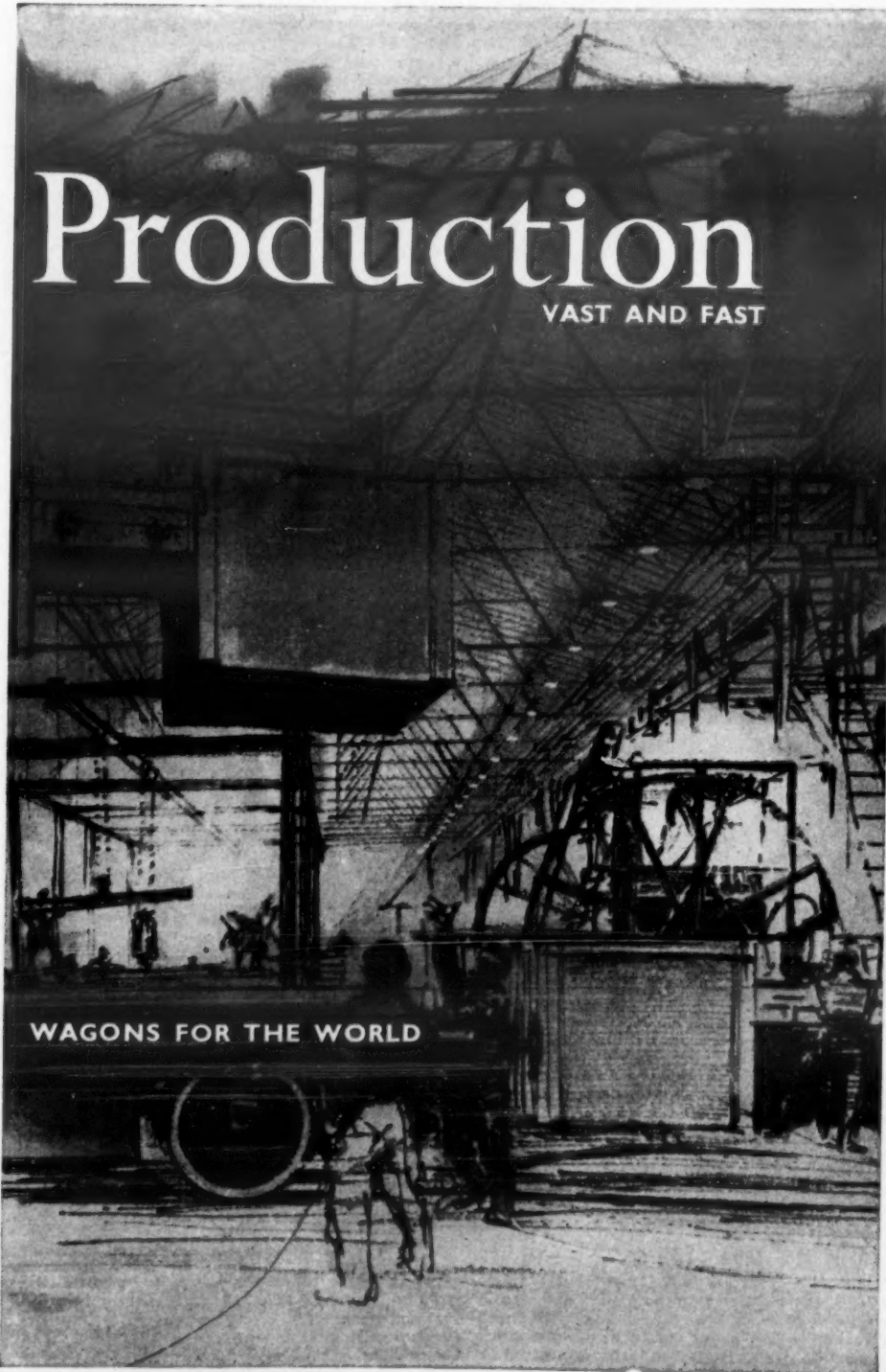
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COMMERCIAL AVIATION

E.A.A.C. Charters Britannias

LONDON APPROVAL FOR 707

THE British Overseas Airways Corporation and East African Airways Corporation have concluded a new partnership arrangement by which B.O.A.C. is to make available to E.A.A.C. Britannia 312 aircraft on a charter basis. As a result E.A.A.C. inaugurated services between East Africa and Britain with these air liners on October 8. The introduction last week of B.O.A.C. Britannia 312s on the routes between Britain and East Africa presented E.A.A.C. with competitive problems, as it had been operating Canadair aircraft on these routes. The new arrangement will enable it to maintain its competitive position until its Comet 4s are delivered in 1960. Initially the chartered services operate once weekly in each direction between London and Nairobi, via Rome, Khartoum and Entebbe, and the service is extended to Dar-es-Salaam once a fortnight. The frequency will become twice weekly in April next year and subsequently additional E.A.A.C. flights will be introduced as traffic warrants until their frequency equals that of the B.O.A.C. services. Revenue from the partnership services will be pooled and shared upon an agreed basis. Aircraft employed on these flights will be in livery of E.A.A.C. The agreement also provides for at least three Comet 4 flights a week between East Africa and Britain when E.A.A.C. introduces jetliner services in 1960.

First Electra Delivered

Eastern Airlines has received the first of its 40 new Lockheed Electras. The aircraft was to remain at the Burbank factory for a few days while pilots received familiarisation training. Then it was to be flown to the Eastern Airlines operating base at Miami, Florida, for further training flights before going into scheduled passenger service on December 1. Subsequently, Electras will leave Lockheed's assembly shop at a rate of about one a week and 12 should be in the hands of Eastern Airlines by the end of the year.

Protection for the Argosy

Fuselages of the new Armstrong Whitworth AW 650 Argosy turboprop transport aircraft will be fitted throughout with Pyrene aircraft fire protection equipment. This will include Pyrene impact crash switches; Pistol-Grip CO₂ hand fire extinguishers for flight deck areas; Wet Water extinguishers for passenger and freight accommodation areas; and, where specified, smoke detectors to give immediate visual and/or audible warning to flight decks upon the occurrence of smoke in compartments covered by these appliances.

American Date for Jet Service

American Airlines has announced a January 11 starting date for the first internal jet service in the United States. Its first Boeing 707 made its maiden flight on October 5. Several others are on the final flight line and will be making their initial flights in the next few weeks. In all, American has 25 of the long-range Boeings on order. The airline disclosed that it will operate daily flights between New York and Los Angeles, starting Sunday, January 11. American also said it will extend the service between New York and San Francisco via Chicago on Sunday, January 25.

B.O.A.C. to Caracas

B.O.A.C. was to start a twice-weekly Britannia service from London to Caracas, Venezuela, on Thursday, October 16, but the unofficial strike of its engineers at London Airport made this unlikely when we went to press. This will be the first time that B.O.A.C. has operated from Britain to Venezuela. One service each week will fly London—Bermuda—Port of Spain (Trinidad)—Caracas in a total journey time of 21 hr. 25 min. The other weekly service will make an additional call at Barbados, and in this case the overall journey time London—Caracas will be 22 hr. 40 min. In the reverse direction, from Caracas to London, the journey times on these routes will be 18 hr. 5 min. and 19 hr. 15 min. respectively. The Caracas services will be flown by Britannia 312s, with accommodation for 34 first-class and 39 tourist passengers.

Aids to Air Navigation

The Ministry of Transport and Civil Aviation has decided to arrange a series of demonstration flights in a de Havilland Comet to show observers from a number of different countries the advantages of adopting the well-tried Decca and Dectra systems as an international standard aid to air navigation. These demonstration flights will enable international observers to make their individual assessments of the two complementary systems prior to the special meeting of the International Civil Aviation Organisation in February, 1959, to select a future short-range navigational aid for aircraft—a meeting that has evoked wide interest. Plans are in hand for a series of demonstration flights to be made in Europe in January, 1959. In February it is intended to conduct further demonstrations from bases in North America. Invitations will shortly be issued to aeronautical administrations and airlines to send observers to the demonstrations.

Boeing 707 Approved for London

The Boeing 707-120 has been provisionally approved for commercial services into and out of London Airport, it was announced by the Ministry of Transport and Civil Aviation on October 13. It was stated that, in the light of recent noise tests and ensuing discussions with Pan American Airways, the airline had proposed, and the Ministry had approved, procedures, which were provisional and subject to review in the light of experience. A take-off technique acceptable to the U.S. Civil Aeronautics Administration would be adopted. It would reduce noise disturbance on the ground to a minimum and enable the aircraft to achieve a height of not less than 1,000 ft. over the nearest built-up area along the flight path. P.A.A. had given an assurance that, save on very exceptional occasions, it expected the aircraft to achieve in such circumstances a minimum height of 1,200 ft. When coming in to land, the aircraft would maintain a path not below that prescribed for use with the instrument landing system or precision approach radar facilities for the runway concerned. Where they were not provided, it would maintain a glide path of not less than three degrees. The Ministry also stated that the effects of smoke produced by the aircraft on take-off would be carefully watched.

RAILWAY DEVELOPMENT STUDY



W. H. F. Mepsted

Mr. W. H. F. MEPSTED, M.Inst.T.

The appointment of Mr. W. H. F. Mepsted as chief development officer, Southern Region, British Railways, took effect on October 5, as already foreshadowed in our columns. Born at Gillingham, Kent, William Henry Frank Mepsted entered the goods department of the South Eastern and Chatham Railway at Deal in February, 1912. After gaining further experience at Sandwich and on the relief staff, he entered the office of the Eastern district traffic superintendent at Ashford in 1914. From 1916 until 1919 he served in France and Belgium with the Railway Operating Division of the Royal Engineers. Upon his return to the railway he undertook various specialised duties, including control of the hop-picking traffic arrangements in the Paddock Wood area and the seasonal passenger traffic on the Kent coast. After the grouping of the railways, Mr. Mepsted joined the staff of the newly appointed operating superintendent of the new Southern Division, at Brighton, as passenger trains clerk, where he took part in the reconstruction of the Central Section passenger train timetable. Fifteen months later, in April, 1925, he was appointed assistant stationmaster at Victoria and became senior assistant stationmaster there in May, 1928. In February, 1933, he was made stationmaster at Charing Cross, and in November, 1936, assistant divisional superintendent, London East. In January, 1942, he became divisional superintendent, Southern Division, Southampton, and was a member of the Poole Harbour Commission and the Southampton Port Emergency Committee, while he held that post. From October 1, 1943, he was appointed assistant to commercial superintendent, becoming assistant commercial superintendent three months later. In March, 1949, he was appointed commercial superintendent, Southern Region, which post was subsequently redesignated chief commercial manager. Before the railways were nationalised, and since, he has served on various inter-company and inter-regional conferences and committees dealing with commercial subjects. He is a member of the South Eastern Area Transport Users' Consultative Committee and a director of the Aldershot and District, Devon General, East Kent, Hants and Dorset, Maidstone and District, Southdown, and Wilts and Dorset bus undertakings.

WHITEHAVEN TUNNEL

Reconstruction Over 26 Years

NO INTERFERENCE WITH TRAINS

WHEN recently Mr. J. Taylor Thompson, chief civil engineer, London Midland Region, British Railways, formally placed in position the last stone of the reconstructed Whitehaven Tunnel, it marked the closing chapter of 26 years' work. During this time the old lining of the tunnel had been completely removed and replaced and in addition increased clearances were given and curves reduced. The tunnel was also strengthened at several points where it is crossed by roads. The job on this single track 1-mile-long tunnel between Carnforth and Whitehaven was carried out at nights without interference to trains and there was not a single serious or fatal accident during the whole of the work. The completion date was just a fortnight earlier than the scheduled finishing date estimated 20 years ago.

The tunnel was built in 1845 to provide a direct link between two Whitehaven stations—Bransty (terminus of the Whitehaven Junction Railway) and Corkicle (terminus of the Whitehaven and Furness Junction Railway). A tunnel was necessary because the railways could not get powers to make an open cutting through the land of Lord Lonsdale and the park adjoining Whitehaven Castle.

Rebuilding Began in 1932

Between 1923 and 1931 constant repair work was going on and in 1932 parts of the tunnel had to be rebuilt because distortion and movement of the walls and arch were causing clearances to traffic to be dangerously reduced. Between 1932 and 1935 about 300 ft. of tunnel, not in one length, was rebuilt together with a considerable length of side walls only. At this stage complete renewal was not foreseen and the original horse-shoe shape of the tunnel and height of 16 ft. 8 in. was adhered to but with an increase from 13 ft. 6 in. to 14 ft. in width at the waist.

However, as rebuilding progressed, it became evident that the tunnel needed relining throughout, but the pattern had been set by the sections already rebuilt. Complete relining was decided upon by the chief engineer of the L.M.S. Railway in 1935, the work to be authorised on a yearly basis. In addition to complete relining, it was decided also to improve the alignment of the tunnel, but here the freedom to slew the track was limited by the difference in width of the temporary rail centres and the proposed new profile. Nevertheless it was found possible to introduce transitions on the curves and the correction of the curvature was done by the Hallade method. The length of the tunnel permitted work to be done at several places simultaneously, the line and level having, of course, to be co-ordinated at all times.

Owing to the limited clearances, work inside the tunnel required complete possession by the district engineer's men and for a long period this meant working only five or six hours a night with 18 or 19 men. At one time complete closure to speed up the work was considered but found impracticable owing to heavy cost of bringing diversionary lines into use. When in 1939 it was agreed as an alternative to increase the number of men at work, the war made this impossible.

Foundation and Ballast Renewed

The general scheme consisted of removing the old lining of the tunnel, forming new concrete foundation 3 to 4 ft. below rail level on solid rock and building a new lining in engineering brick five to six courses thick. After the relining, the rock foundation was lowered to give a minimum depth of 6 in. of ballast below sleepers and trimmed to fall to new drains on each side of the tunnel. The track was rebalasted throughout. The original dimensions of the tunnel were: 16 ft. 8 in. above rail at centre, 13 ft. 6 in. wide at waist reduced at some places to 11 ft. 5 in. by distortion and movement of walls. The new dimensions are 16 ft. 8 in. above rail at centre and 14 ft. wide at waist.

The method of working involved the use of rail centres bent on flat which were erected in shapes to suit the existing distorted lining. The feet of these were carried on rails laid on the flat on 12 in. by 6 in. sole timbers. At times the clearances were so small that recesses had to be cut in the walls to allow vehicular clearance. Initially three lengths of 8 ft. were lagged and strutted and demolition of the centre section started at the crown. The lining of rock was then excavated to the requisite dimension to provide space for the new work. The excavation was then carried down to provide a good bearing for the foundations which were laid to a predetermined line level and gradient. The new brickwork was then built up to the revised profile.

Difficult Sections

Difficulties were met with at a number of points, among them Bransty, where a retaining wall was built in sections in trench behind the old tunnel, which at its skew entrance was heavily surcharged. This involved a temporary bridge to carry road traffic to a local coal mine. Finally a new bridge of rolled steel joists was substituted for the tunnel lining and this gave a wider entrance and allowed improvement of the permanent way. The completion of this part of the work allowed a track slew of 1 ft. 11 in. and the elimination of a very troublesome 1 in 6 lead with A switches which lay inside the tunnel. This was the biggest single improvement in alignment and involved partial reconstruction of Bransty down platform.

The last problem was the renewal under the G.P.O. repeater station near the Corkicle end of the tunnel. This brick building, which contains many thousands of pounds' worth of electrical equipment, stands directly over the tunnel which lies about 9 ft. below it. Underpinning would have been difficult and costly and it was decided to ask the miners to be specially careful in excavation and to follow up very closely with their timbering to avoid any loss of the material which lay between. It says much for their skill that this was done without any complaint of damage from the G.P.O. The final item of work on the tunnel renewal was the introduction of a new portal 100 ft. behind the old one at Corkicle and the removal of the cover and the demolition of this length of the old tunnel.

The work had been carried on to a carefully arranged schedule over a period of 26 years and it is interesting to note that when the work had been in progress for some years, in August, 1938, Mr. A. Tims, then assistant district engineer, Barrow, estimated that if work continued on schedule it would be completed in 20 years. His estimate was only 14 days out.

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Management in Transport

(Continued from page 3)

easy to be in daily contact with people thousands of miles apart. Merely to take advantage of this is not only not enough but it is a trap, and can lead to the worst form of chairborne management.

Secondly, the boss must know what is going on "on the ground." I have spoken of the head of the organisation, but what I have said applies even more importantly to all his subordinates and junior leaders.

The Awful Barrier

I have referred to the relationships between management and men; but these will not work unless the human touch is there. It is only through leadership that men can be made to feel they are really part of the show and what they do matters. It is leadership alone that will break down that awful barrier between "we" and "they" and dispel the frustrating feeling that all would be well if it were not for the remote and inhuman "they" at higher levels who interfere in everything solely for the sake of interfering.

The days are gone when the boss could hire and fire without rhyme or reason, and issue orders that needed no more justification than his whims or fancies. The logic of the situation must be allowed to dictate the decision, and not mere arbitrariness. Wages and conditions of service must be properly settled by agreed methods of collective bargaining. Promotional procedures must provide adequate opportunities without fear or favour. Trust must replace fear. Disciplinary machinery must determine the assurance of a fair deal, in contrast to the arbitrary punishments and summary dismissals of bygone days. It is only leaders with knowledge and understanding who can make these processes work.

In this connection it is always well to remember that there are leaders who represent the men's point of view. The same qualities are called for in them, so that there should be trust and understanding on both sides. It should be our continuing aim to see that this is so, and I feel strongly that the greater security of modern times continually needs to be matched by a greater sense of responsibility.

Qualities of a Leader

What are the qualities for which we should look in a leader? I suggest the following—courage, willpower, judgment, knowledge and flexibility of

mind. Courage is probably the basis of good leadership. It is really moral courage to which I refer, a higher degree of courage than physical courage, and the more senior the leader the more necessary. I think that with this attribute goes toughness, by which I do not mean being stupid and brutal, and not listening to advice and criticism, but having the courage of his convictions, and when a course is set following it with determination, particularly in adverse circumstances.

If a leader is really to lead he must impose his will on those whom he is leading. If courage is the basis of his make-up, willpower becomes the most important requirement. When a course of action has been decided upon and agreed, there will be all sorts of difficulties to be overcome in implementation. It is the willpower and the enthusiasm of the leader for the job in hand that enables difficulties to be overcome and ensures that his purpose is carried out.

Judgment and Flexibility

I think everybody would readily agree that these two attributes would very soon get a man into great difficulties, unless he is what I would describe as balanced. A man will never be a leader unless he has the capability of sound judgment. Knowledge is indispensable. The leader who issues orders without full knowledge of what he is dealing with is quickly found out by those who have to carry out his orders, and is bound to run into trouble. At junior levels it is simple, the leader must know more about the actual job in hand than those for whom he is responsible. The knowledge that he requires in higher management is more an understanding of the concern as a whole, how it fits together, what weight to give to the advice of his experts, and, perhaps most important of all, a knowledge and understanding of those who are working for him at all levels.

The last attribute I mentioned was mental flexibility. The ability to conjure up a situation far removed from his desk, to project his mind for the purpose of seeing the effect that a decision will have on an existing situation, to cast his mind over existing methods to figure out ways in which things can be done better, to look into the future to see how things are likely to develop, and to visualise the measures that will be required to cope with new situations. All these visionary exercises, and many others like them, must find their place in the make-up of a leader. It is the man of vision who best fulfils the role of leader and manager.

Training for Management

Now if you have a man with all these qualities, there is still something missing—"integrity." Integrity can perhaps be described as a combination of the moral qualities uprightness, honesty, sincerity and loyalty. Perhaps just unselfishness, thinking and caring for other people before himself. But it is essential that our leader should have these qualities, and be seen to have them, if he is to succeed.

You may wonder why I am addressing the Institute on this subject. It can be argued it is the duty of transport undertakings, both large and small, to ensure that the supply of good leaders is assured, and that the principles of management are understood. Of course this is so, and a heavy responsibility rests upon the larger organisations to select and train people for managerial positions, and smaller undertakings have also their part to play. No one can be complacent. Undertakings large and small need to consider what they can do to ensure that there is a continual flow of good quality personnel into the industry.

Role of the Institute

But the Institute also has, in my opinion, a very special and important part to play in the educative process. In the first place, there is qualification by examination for the transport man, with the object of ensuring that all have a good standard of knowledge in basic transport. Secondly, there is the forum for discussion, not only about the technical methods of moving people and goods, but also about the pattern the industry should take, and how it should be organised and managed. Lastly, and by no means least, is the encouragement that should be given by the more senior people to the younger generation to qualify by the examinations, and to take advantage of the forum.

This purely academic approach, however, is not enough in the world today, certainly not in the Institute. It is leadership that is required, with the object of getting the younger generation interested, of encouraging them to become proficient, and, most of all, of setting them a standard of conduct to live up to which will enable them to be the leaders of the future. You can teach the techniques of transport, the science of management, but the art of management—"leadership"—can only be passed on by precept and example.

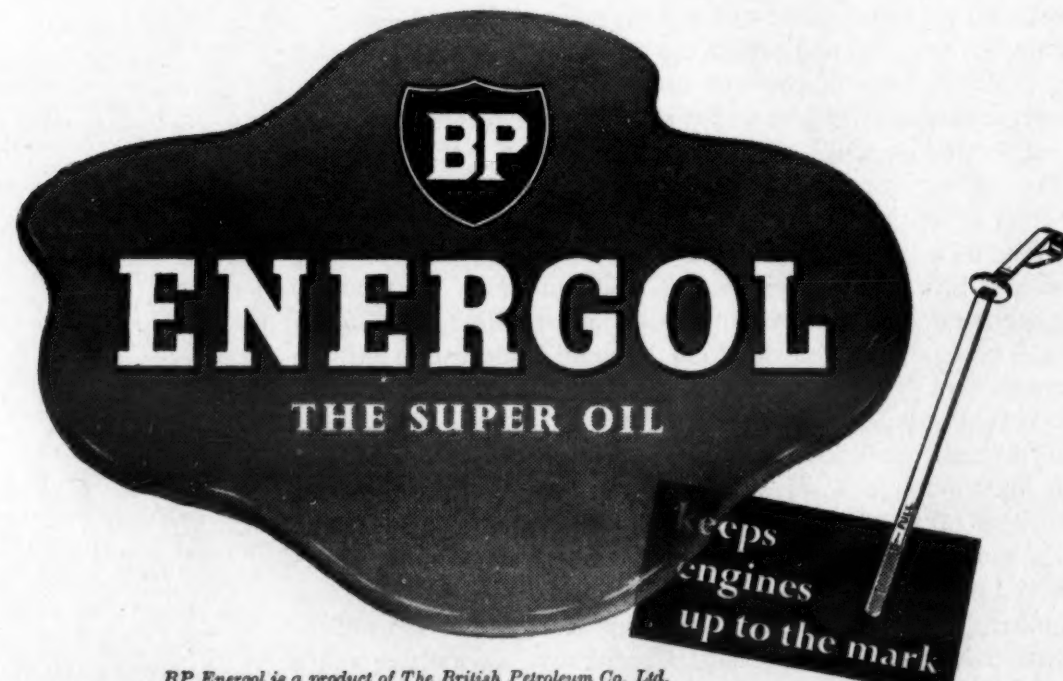


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MODERN AIRWAYS and COMMERCIAL AVIATION SECTION

AIRLINES AND TOURISM

Making the Most of Attractions

By JOHN BRANCKER, M.Inst.T., Traffic Director, International Air Transport Association*

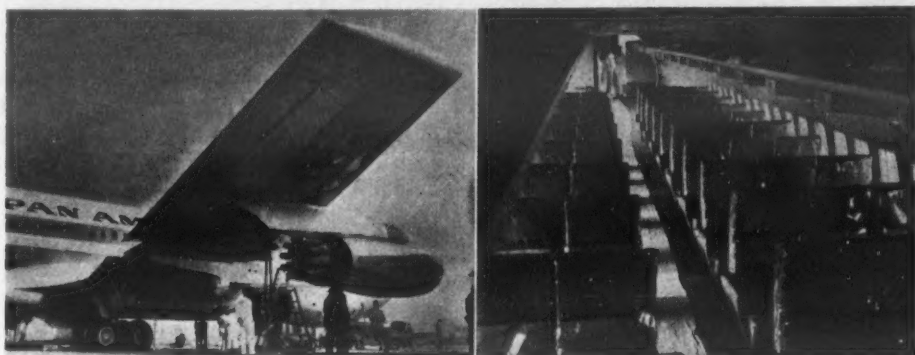
THE facilitation of tourists and the provision of the right type of accommodation for them are matters which are so important to our collective wellbeing that they are worth emphasising. I know, only too well, that such things cannot be achieved by simply waving a wand; and I do also appreciate the very great efforts which you are making—not without success—to improve matters. Let us hope that progress will be sufficiently quick to prevent any possible economic loss which might result from a deficiency of these facilities.

Recently the air transport industry has been the subject of a good deal of well-meaning, but perhaps not very well-informed, criticism about its rate of expansion. It has been pointed out that because of the large orders placed for new aircraft there may be an excess of capacity over potential traffic during the next two or three years. It has also been said that the airlines have not given sufficient thought to their own financing and they have bought more equipment than they can properly pay for. At this particular stage in the game it is, I suggest, quite impossible to say whether these

more often, or, alternatively, to fit in side trips for pleasure or other reasons which would otherwise have been impossible. These factors together indicate that the right answer to the question of who is the customer is: "an ever-growing number of people (including all business travellers) with an increasing variety of tastes and interests."

Now if we take a hard look again at the question of "What have we to sell?" I suspect we may find that there is a great deal more on the shelves of the store than we originally supposed. The traditional attractions will remain attractive, and good presentation will please our old customers as well as many of the new ones, but I suggest the objective should be to find new goods for new potential purchasers. Incidentally, they may well titivate the appetites of visitors who at present believe they are satisfied.

It is a pity that tourists cannot be attracted so easily, but I am quite sure that a painstaking inventory will reveal more than a few aspects which are not yet being properly exploited. It is not my intention to try to list the sort of things to be recorded, but rather to urge that this kind



Among the large jet aircraft on order in substantial numbers is the Boeing 707. These views of the 120 version were taken when Pan American Airways brought it into London Airport for the first time and show the engine pods with the silencers and, right, economy class seating

criticisms are really justified, but I think the important point must be made that from the point of view of International Union of Official Travel Organisations, the question need not cause any worry. If, indeed, the airlines have shown too much courage in their plans for expansion, then this can only be of benefit to the tourist, and if we do reach a stage where the capacity available exceeds the immediate traffic demand, then it will really be the first time since the war that this situation has existed.

Increased Capacity

The size of the airline re-equipment programme shows that they have faith and courage in abundance. A fleet of pure jet and turbo-propeller aircraft has been ordered which will cost something in the region of five billion dollars. This fleet, when fully operational, will amount in fact to introducing new passenger transport capacity equivalent to more than 160 ships of the size of the "Queens." This is no mean figure and it is not perhaps surprising that it has caused excitement in certain circles. The point, however, which I do want to make is that this tremendous carrying capacity is a direct contribution to the international tourist industry of the world. The fact that it will provide better, quicker transport than we have known hitherto, makes the contribution even more valuable. I know that in this connection there is a tendency to introduce false sentiment and to overstate the benefits accruing to mankind from fast transport.

Let there be no mistake. The airlines are bringing in this new equipment because they regard it as a sensible and businesslike thing to do, and not as an act of charity. They are bringing it in because they believe, like you, that the international tourist market is a worthwhile industry. They are bringing it in, too, because they hope at least to make a reasonable profit by doing so. In the light of the profits which have been achieved during the last year or so, this act in itself particularly requires considerable faith; however, they do believe that as long as traffic is permitted to move freely, and with skilful and energetic selling, they will get a modest return on the large sums of money involved. This commercial outlook, however, does not detract in any way from the genuine benefits which the world will derive from a transport development of this magnitude.

Assessing Tourist Attractions

Now may I turn to the other aspect. There are three main elements which are important to the success of the world tourist industry—the places to visit, the facility to travel, and the proper marketing of the complete journey. First of all, what are we selling? This may seem an obvious and wholly unnecessary question, but it is one worth thinking about. I believe there is a tendency for all of us to think a little too much of the past and not quite enough of the future when assessing tourist attractions.

For obvious reasons there has been an almost overwhelming concentration on the North American market. It is certainly a very good market, and the dollar is a nice hard currency which we all like to earn. But it is not the only market—and there are a lot of other currencies which are useful to have and to spend. Every year the standard of living—and the standard of education—moves slightly upwards in the world generally, and each year, therefore, there become more and more people who can not only afford to travel abroad, but are intellectually interested in doing so.

Effect of Shorter Transit Times

Shorter transit times by air do two things: they not only make it possible for more people to find the time to travel abroad for pleasure, but also (besides encouraging business travel per se) they make it possible for the individual who travels primarily on business either to travel farther or

of approach should be tried. It is worth remembering that the general trend towards shorter working hours has provided several million people with more leisure; not only leisure to travel but leisure which has enabled them to indulge in various hobbies and pastimes—many of which may have particular significance in the countries which you represent.

Benefits of Dispersal

Such an approach may have other advantages. We are all vexed by congestion in the cities, and the tourist capacity of every country would be considerably expanded if visitors spent more time in the countryside and less in the main metropolitan centres. Seasonal dispersal—i.e. the extension of the tourist season—is extremely difficult because it conflicts with deeply ingrained social habits—habits, moreover, which are based on school and government customs; but if seasonal dispersal is impractical, advantages can be gained by geographic dispersal. Even if some of these minor attractions are insufficient on their own to draw traffic from distant points abroad, they may be quite sufficient to induce tourists to stay longer—and to spend more; which leads in turn to another aspect. I have already mentioned the fact that all business travellers should be treated as potential tourists. Faster speeds in the air increase this potential because if less time is spent in travel there is more time available for other purposes. These purposes may be either more business visits, general sightseeing, or—and this is an important point—the enjoyment of some special hobby or interest, whether wholly recreational or connected with the industry with which the visitor is particularly concerned.

You will rightly point out that, even when you have compiled complete lists of new attractions, it will be difficult to bring these to the notice of potential visitors. It will certainly not be easy, but for that matter no sales job is wholly straightforward. The attack may have to be different in each country of sale, depending on the media available and the distribution of the population. Obviously, the usual methods must be continued, and in many cases intensified, to reach the general public, but another channel—already used to some extent—might be through specialised journals, club magazines and other publications dealing with those recreational pursuits which your own area can provide.

Side Trips

Although it may appear difficult to arrange, I would like to see every traveller asked by the travel agent at the time of booking two questions: one, what are your business interests?, and two, what is your favourite hobby? and then to be handed two leaflets (compiled, of course, from the inventories which I have suggested) showing the facilities available under both these headings in the vicinity of the place to which he is travelling—and remember, with air transport, "vicinity" can mean the area within a radius of 500 miles. I know that a certain amount on these lines is already being done, but I suggest that there is scope for very much more. It is important, too, that the information should be readily available so that the travel agent can at least instil the idea of a side trip before arrangements are made for the return journey.

There is one further point, and that is the question of repeat business. Travel inspires travel, and if visitors are made happy once they will tend to go again, even if it is just to see those things for which time was not available on the first journey. Even if it is not exactly the same person who undertakes the second journey, it may well be a close friend or relative who has been inspired by the first passenger. But, for this to happen, the first journey must have been successful both as regards comfort and value for money. We should not overlook, either, the maddening but quite irresistible urge on the part of more human beings to show newcomers something which they happen to have seen before.



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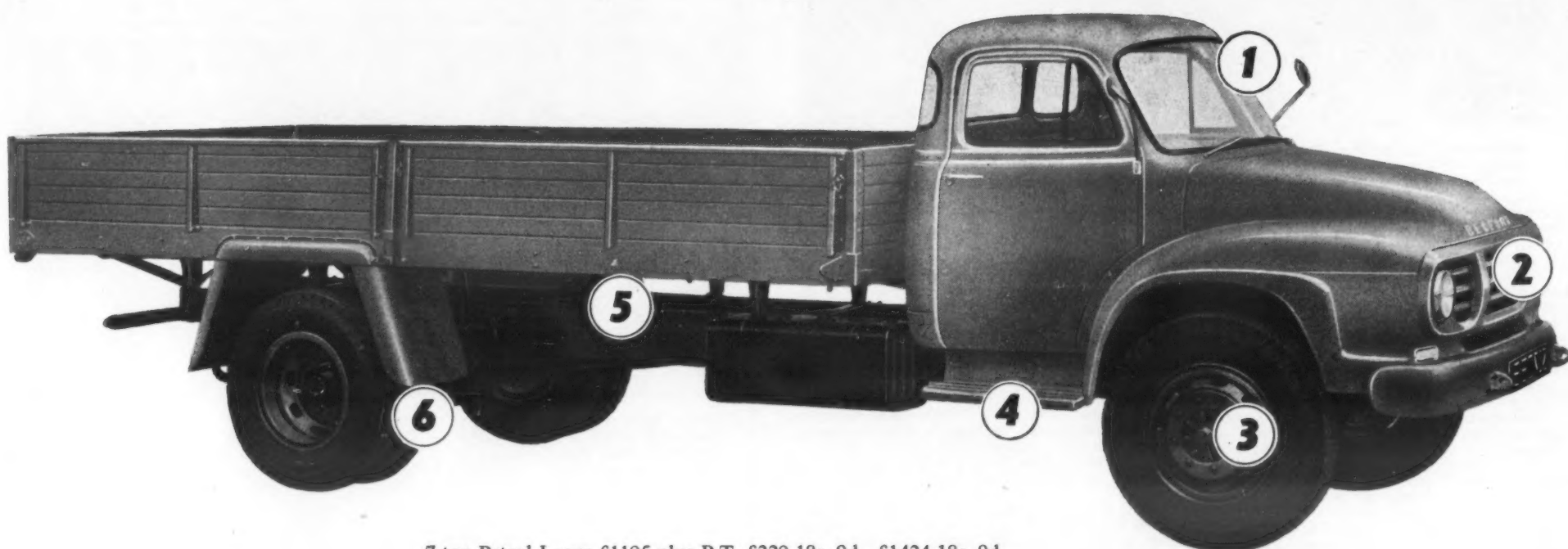
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* Abstract of an address to the annual assembly in Brussels of the International Union of Official Travel Organisations.

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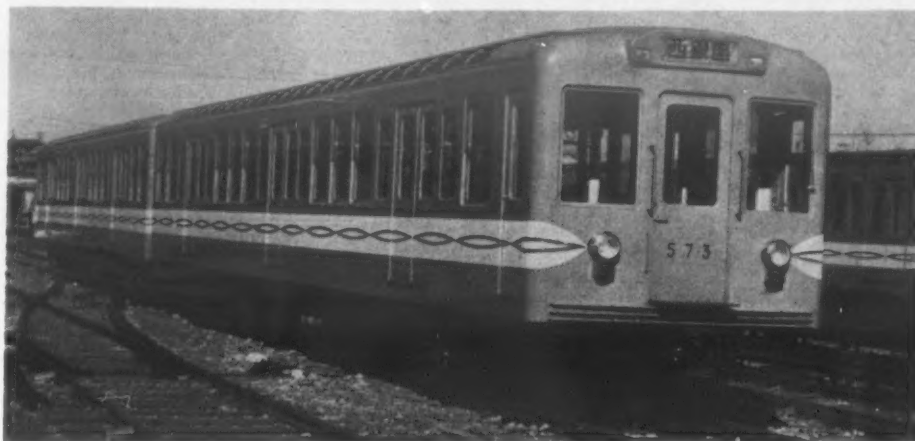
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EXTENDING TOKYO UNDERGROUND

Developments in Japanese Capital
TO RELIEVE TRAFFIC CONGESTION

UNDERGROUND railways in Tokyo were inaugurated in 1927 with the opening to traffic of a 1.4-mile section between Asakusa and Ueno in the north-east of the city. Prewar development was slow, but by 1939 the route had been extended to Shibuya in the south-west, thus completing the present Ginza Line of nearly nine route-miles. This line

of the population moved from the centre of Tokyo to the suburbs and did not return when the war ended. Meantime, the overall population of the Japanese capital has been steadily increasing—7,300,000 in 1940 to 8,335,000 in 1957—adding still more to the growth of the residential suburbs, whilst simultaneously the business centre has expanded, mainly skywards. This has led to an unprecedented demand for transport between the



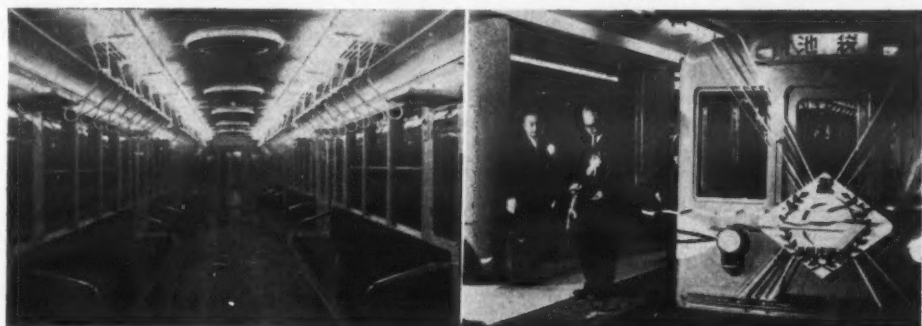
One of the new all-steel permanently coupled two-car sets normally used in pairs on the Marunouchi Line

runs right across the city centre passing under Ginza Street which is the main shopping centre of Tokyo, linking the business and shopping areas with the north-east and south-west suburbs. It is mainly in tunnel with the exception of one short elevated section of some 400 yards. Tunnelling was by means of box-Rahmen reinforced concrete tunnel sections

suburbs and the city centre, a situation aggravated by a general development of the travel habit for other purposes.

Postwar Construction and Plans

By the early 'fifties surface traffic was reaching saturation point and traffic conditions in Tokyo were getting out of control. Relief could only be obtained by the construction of additional rapid



Interior of a new two-car set and, right, the opening ceremony at Nishi Ginza Station on December 15, 1957

installed under cut-and-cover arrangements. Tokyo is, of course, in an area subject to severe earthquakes.

Traffic Problems in Tokyo

The Ginza Line, in common with the later additions to the Tokyo underground network, is now owned and operated by the Teito Rapid

transit facilities, and particularly underground routes. The city authorities evolved a long-term planning programme incorporating the ultimate construction of four new lines, and in 1951 the Teito Rapid Transit Authority announced its own plans for the construction, by 1964, of two of these routes, namely, the No. 4 (or Marunouchi) Line, between Ikebukuro and Ogikubo (including the Honancho branch) with a route-mileage of 16.5,



Underground and suburban railways in the Greater Tokyo area

Transit Authority which was set up by statute in 1941; previously this line was under the management of a private company. It has 18 stations in all, trains being operated in five-car sets with a headway of two minutes at the peak travel periods. The nine-mile journey is covered in 34 minutes, a flat-rate fare of 20 yen being applied irrespective of the length of journey.

It was not until 1951 that any further extension work took place. During the war large numbers

and the No. 2 Line, of 13.5 route-miles, between Kitasenju and Nakameguro. In 1953 the average number of passengers travelling daily between the centre of Tokyo and the suburbs was eight million, only 5 per cent of whom used the underground route; by 1965 it is estimated that this number will have reached 10 million, of which 16 per cent will travel by underground.

Construction work on the Marunouchi Line began in 1951 and the first section, between Ikebukuro

(Continued on page 16)



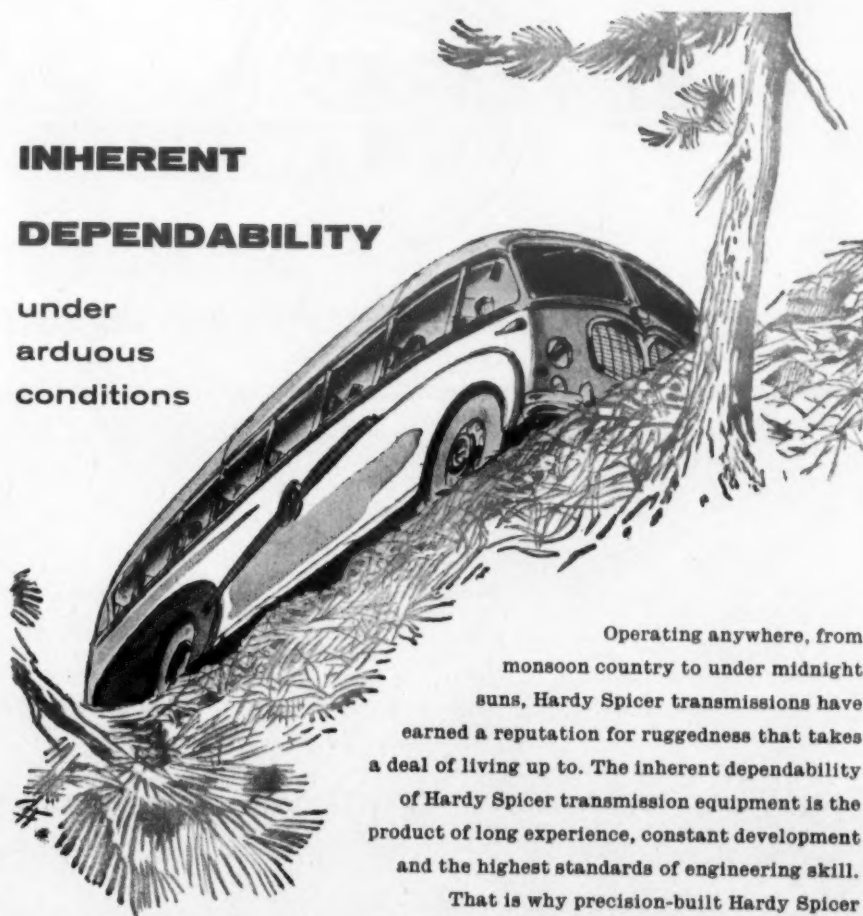
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Extending Tokyo Underground

(Continued from page 15)

and Ochanomizu, was opened to traffic in 1954, whilst further sections were opened to give through running from Ikebukuro to Tokyo main-line station in 1956. The most recent section of new line, namely that between Tokyo Station and Nishi Ginza, was inaugurated in December, 1957. Work is now continuing, and an extension to Shinjuku

Line at Akasaka-Mitsuke and will connect with certain of the private electric railways which terminate outside the centre of Tokyo.

It is the present practice to operate four-car sets with a 2½-minute headway on the Marunouchi Line and again a 20-yen flat-rate fare is charged. Ten stations are open at present, the six route-



Entrance to Tokyo Station on the Marunouchi Line outside the Tokyo Station of Japanese National Railways and, right, the island platform of the subway station

is scheduled for completion in April, 1959, whilst a further section to Ogikubo, including a branch to Honancho, will be in operation by 1962. The Marunouchi Line again passes under the centre of Tokyo and, in addition to providing transfer facilities with various Japanese National Railways' stations, including the main city terminal, it will provide interchange arrangements with the Ginza

miles operated being covered in 19 minutes. All stations are illuminated by fluorescent lighting.

Work on No. 2 Line

Construction work has also commenced on No. 2 Line between Kitasenju in the north-east suburbs and Nakameguro in the south-west. This line will, along some of its length, tend to duplicate the

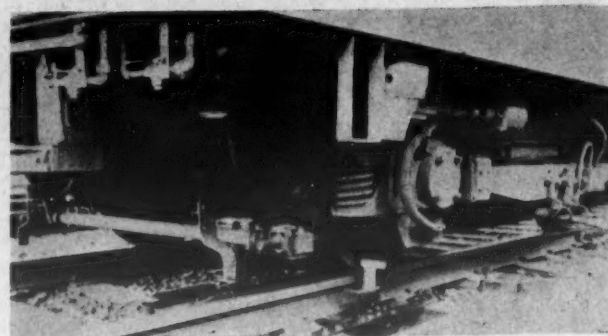


The bridge at Ochanomizu and the tunnels under the Japanese National Railways. The latter were constructed by that undertaking

Ginza Line, but it will extend further both north and south, and it will connect with private suburban railways at its terminals with the eventual intention of providing through running facilities. The entire line is scheduled for opening in 1964. Two other routes, shown as Lines No. 1 and No. 5 on the map on page 15, were also included in the Tokyo City Planning project. Construction work on No. 1 Line between Oshiage and Magome, 10.75 route-miles, has been commenced by the Transportation Bureau of Tokyo Metropolitan Government, but no date of completion has been scheduled. Line No. 5, of 15 route-miles, is only in the elementary planning stage, as are certain minor extensions of the existing Ginza and Marunouchi Lines.

Construction Methods

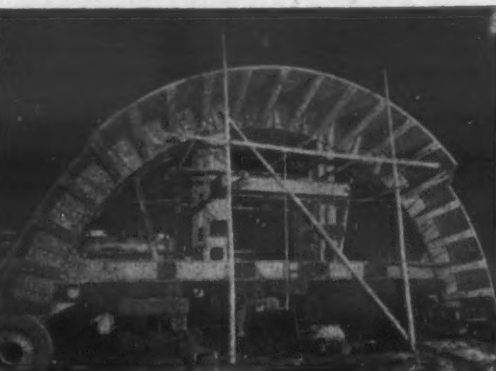
Construction of the six route-miles of the Marunouchi Line so far opened for service commenced in April, 1951, and was completed in December, 1957. The capital cost of this work was 12,223 million yen (£12,000,000). Short sections totalling a little more than a mile are on the surface or elevated, the remainder being in tunnel. The



Motor bogie showing the trip arm of the automatic train stop and, at the right, the collector shoe

tunnel to be constructed at the maximum depth for the line of 75 feet. In this case, what is known as the roof-shield method is being used, excavation taking place ahead of a special roof shield frame.

Certain other major engineering tasks are worthy of special note. At Ochanomizu a 40-yd. double-plate girder bridge, which was constructed at a 33 degrees angle of skew across the Kanda River, led into a tunnel section under the tracks of the Japanese Government Railways (J.N.R.). This tunnelling was entrusted to the J.N.R., the tracks



Using the pneumatic caisson method to sink concrete box tunnel structures and, right, the roof shield frame seen from the front with its temporary framework

majority of the tunnelling (about 4.8 miles so far completed) is of the box Rahmen reinforced concrete type, the sections being built up underground using the cut-and-cover method. The same methods are being used for the remainder of the line now under construction, but the cut-and-cover principle will not be possible at certain special locations. Thus in two heavily built-up areas, with a soft subsoil of clay and silt, the concrete box tunnel structures are being prefabricated above ground and sunk into position by the pneumatic caisson method. In constructing a 240-yd. section near the National Diet Building, the subsoil was found to be largely fine sand with the water level at a depth of 180 feet, whilst the plans called for the

of which are carried over the subway lines on prestressed concrete girders supported by special pillar foundations. Tunnels had to be constructed under the Outer Canal at two points; by coffering sections of the canal, it was possible to install the tunnelling by the cut-and-cover method without interference with canal traffic. For all the tunnelling on this line, the Teito Rapid Transit Authority has purchased ready-mixed concrete instead of mixing it on the spot. To reduce noise alongside surface lines in residential districts, specially designed anti-noise concrete walls from 5 ft. to 10 ft. in height have been built.

Track throughout the entire system of the Teito Rapid Transit Authority is of 4 ft. 8½ in. gauge. Rail of 50 kg. per metre (100 lb. per yard) section

(Continued on page 18)



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TOPICS AT TORQUAY

Road Haulage Association Conference

MORAL SUPPORT NEEDED FROM INDUSTRY

THERE was a familiar atmosphere, the we've been here before feeling, in more senses than one, about the opening of the Road Haulage Association conference at Torquay on Tuesday morning this week—unwelcome political interference looms ahead and the industry is busy seeking its allies for a future campaign against re-nationalisation. The Minister of Transport, the first holder of that office to open an R.H.A. conference—and he received a standing ovation at the end of his remarks—called it a most important moment for the industry. There were two possible courses ahead; one that it should be allowed to go on providing the essential services to the trade and industry of the country in the way that only private enterprise could, or that it should be cast back into the melting pot of politics to be faced with some potential legislative solution based on the Socialist pipe dream of an integrated transport system. He could not advise a policy of what he called non-aggression for road transport in those circumstances. What the Conservatives wanted in road haulage was competitive co-existence, not a State-monopolised monopoly.

The fact that we had not recently heard a lot about re-nationalisation was because it was an extremely dirty word in politics. In fact, thanks to a great deal of clever double-talk by Socialists, the country had been lulled into a quite false sense of safety from further large-scale measures of nationalisation for some time ahead. Every time he had challenged Mr. Strauss the latter would never give an unequivocal answer about free licences either. He was not criticising the men who ran the present nationalised industries, nor for that matter trade union leaders, because they too suffered under this Socialist incubus and from fear to express their feelings might agree with them. The Conservatives were trying their best to work towards the greater efficiency of these industries by reform, rationalisation and modernisation, but the industries remained a monument to the futility of nationalisation as a method of management.

Costs and Free Trade Area

Re-nationalisation could not shelter under a guise of a tit-for-tat issue. The Government did not carry out its measure of de-nationalisation to the maximum extreme possible because it wanted a middle of the road solution. There was no doubt that except for purely doctrinaire considerations that was the right solution. It was working well and he congratulated R.H.A. members and British Road Services for striking a balance and working sensibly together to try to provide the country with an efficient low-cost transport service. The Socialist promise was to increase the cost of transport and completely to disrupt an efficient industry which played an essential part in keeping down our industrial costs. Transport costs, in fact, were going to be a key factor in determining our entry into the European Free Trade area. Mr. Watkinson concluded with the remark that they would not have found him on the platform at Torquay if it was simply a matter of self-interest to the industry; it was a wider matter of the national weal. (He had, in fact, at his own suggestion, made the visit between opening the Meriden By-pass on Monday and appearing at a conference in London on Tuesday afternoon.)

The conference went on to reaffirm vigorously its opposition to re-nationalisation and all its works. Mr. R. N. Ingram, the national chairman, echoed the Minister on Socialist tactics. The apparent confusion of thought in their approach to possible restrictions upon the C-licence holder was, he thought, a mere expedient designed to obviate the more general and intense opposition which their transport policy would attract were it stated more specifically, particularly at the time of a general election. The statement made on behalf of the Socialists should, he believed, on behalf of nationalised transport, too, indicate quite clearly that unless C-licence holders were restricted, nationalisation of road haulage would not be sufficient to bolster up the State monopoly.

Appeal to Industry

He addressed himself to transport users in trade and industry with these words: "If they would face the facts squarely, they must surely realise that failure to enter into active opposition to Socialist policy at the proper time meant not only the risk of their being denied the competitive services of independent operators, but with equal certainty the day when their own transport facilities would be inevitably curtailed." The advertising and publicity combination upon which the Association had decided would mainly inform the public and trade and industry of the advantages of using free enterprise road haulage and it would later be aimed at informing public opinion of the case against nationalisation. Mr. Ingram disclosed that so far £35,000 had been subscribed (including £20,000 from headquarters) towards the £100,000 target. It was his personal view that the money would be best spent on a concentrated campaign.

In a reference to recent appeal decisions concerning normal user attaching to A-licences, the R.H.A. chairman said they were confident that licensing authorities would take into consideration practical problems of operation and avoid applying the "somewhat narrow decisions" of the Appeal Tribunal in such a way as to damage road haulage businesses unnecessarily. (It appears that the Association is prepared to be realistic about limitations of normal user and will not condone flagrant departures from stated intentions.) The Minister said he knew of these ideas, promised to bear them in mind and to discuss them in the proper quarters. A new statement of Association policy is to be prepared for approval by the national council, possibly in January next year. It has been delayed because a general election is no longer deemed imminent.

This year the customary rather lengthy list of 25 or so resolutions has been slashed to a third of that number. The first resolution sought to make it a legal requirement that time recorders be fitted to all goods vehicles in the interests of safety and economy and in order to provide accurate records. Mr. A. R. Butt (Birmingham) said that there were two aspects to be borne in mind, safety and economy in operation. Most speeding was done to make up time and was done in the interest of the drivers, not employers. Prosecutions and fines were growing, and there was one means of safety—the time recorder. Another use was in claiming demurrage for ex-

cessive delays, and this provided the economy aspect. Mr. E. W. Wilkins (London) told the conference that the recorders had resulted in big savings with him in subsistence allowances and wages previously paid out unnecessarily. Mr. J. S. Wright (Wolverhampton) remarked pregnantly that nothing had ever been achieved in road haulage without legislation, much though he and many others deplored additional statutory restrictions. It was suggested that the legal requirements section of the resolution be deleted, but this was not followed and, inevitably in the circumstances, it was lost on a vote.

Responsibility of Employers

High in the list of popularity of resolutions is the one dealing with prosecution of employers for offences against section 16 of the 1933 Act, arising out of drivers' falsification of record sheets without the knowledge of the employer and even in breach of written instructions. This year, Mr. T. W. Jackson (Hull) proposed the resolution on the subject. He said that these offences were committed while the driver was away from the employers' control and it was just as impossible for an employer to ensure that records were not falsified as it was for him to prevent the driver exceeding the speed limit. What they asked for was that the operator who genuinely endeavours to keep his business clean should be treated fairly by the law. When drivers falsified the records it was usually for their own personal convenience or to gain the free subsistence allowance. There was no gain to the employer, in fact he was on the losing side because his vehicle had no doubt been driven excessively hard to suit the driver.

The only action he could take was to prosecute the driver, either for obtaining or attempting to obtain subsistence allowances by false pretences; even if successful he could still be charged in the same court at a later date for failing to cause correct records to be kept. Seconding, Mr. J. A. Murly (London) maintained that these prosecutions were against every conception of British justice; employers were in an anomalous and invidious position. Both Mr. R. G. Crowther (Wakefield) and Mr. H. H. Crow (London) had personal experiences to relate. Mr. Crowther said he had recently been prosecuted under section 16 in respect of 30 timesheets out of 3,000 examined. Only one solution appeared—to have a clerk specially allocated to this checking task. Mr. Crow said he was threatened with two cases despite full instructions given to employees. His was a watertight defence, but what rankled with him especially was that he had to pay not only the fine but the court costs also. The resolution was carried unanimously.

Fuel Oil Tax

Fuel oil tax featured in a resolution calling for a refund of the duty to users at present enjoying tax exemption, but only after they had first paid the tax. Mr. A. E. Acey (Whitby) was unsuccessful in proposing this solution to the diesel road fuel records problem. It would follow, he said, that anyone claiming a refund of tax paid would have to prove to the powers-that-be that the use of any fuel oil was such that came within the scope of tax exemption. The Exchequer would in all probability benefit from increased revenue. Mr. H. Hunter (Hull) seconded with the observation that the only way to tackle these absurd requirements was by continually resurrecting them at the annual conferences, but the conference rejected it after hearing Mr. Ingram ask whether it was worth imposing additional work on other classes of user and antagonising them. Removal of purchase tax on commercial vehicles was another resolution passed without dissent. Mr. J. Adcock (London) said, however, that it was no use simply suggesting the shifting of the burden elsewhere. The Chancellor of the Exchequer had only the previous day had some heartening words to say on the subject, admitting that transport was the only industry taxed on its tools. The chairman rounded off the short debate saying that they had a feeling that support in the House of Commons was growing and action could not long be delayed.

Successful Forum

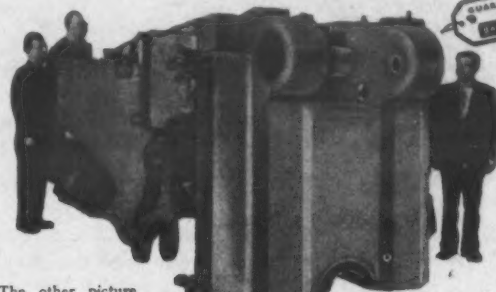
The transport forum on Wednesday morning proved an outstanding success, easily holding its own against the attractions of sunny weather. This was, of course, really no surprise as Mr. Freddie Grisewood was in the chair supported by a stalwart team of four comprising Mr. T. D. Corpe, Mr. Mark Hewitson, M.P., Mr. T. L. M. Iremonger, M.P., and Mr. D. H. Joyce. The first question was a real snorter for Mr. Hewitson, the Socialist M.P., since it asked why, if the Labour Party booklet *Plan for Progress* stressed the importance of reviving competition in British industry, was that party justified in seeking to destroy or restrain competition in the road haulage industry. All Mr. Hewitson could say was that their plans might be achieved by allowing British Road Services to acquire businesses and to run others off the road by competition. Invited from the body of the hall to "have a go," his final genial retort was "It's coming to you."

It was perhaps inevitable that the team should be asked what changes, if any, were desirable in the licensing system. Mr. Joyce thought that the present system could do nothing to counter a period of severe industrial depression, but nevertheless he felt that it should restrict or interfere as little as possible. Licensing was now introducing an element of rigidity into the industry; should it not be eased off a little? Mr. Corpe put up five possible improvements. Licensing authorities had gone too far in interpreting the normal user declaration; the open A-licence had now, in a sense, become a restricted B-licence. His second point was that it should be possible to subpoena witnesses to attend court. Genuine cases often fell to the ground because they failed to appear. Thirdly he wanted a change in the 1930 Act regarding employers' liability for their drivers' records and hours of work. Amending legislation should provide that the employer be liable to conviction only if evidence of neglect of his responsibilities was proved. Next the unfair C-hiring loophole should be stopped and lastly the licensing authorities should have power, where an applicant failed to prosecute his application, to award costs to objectors who were often put to considerable expense. The time allotted for the forum, although generous, proved quite inadequate owing to the interest shown.

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Here is a recent repair of which Barimar are mighty proud. It was a scientific welding job in which every moment counted, for many thousands of pounds of productive work for the British Motor Industry was at stake.

The pictures tell a vivid story of the repair of the crown of a mighty power press that stamps out tens of thousands of body panels and other components for the motor industry in Great Britain every year. This press crown weighed twenty tons and the damage that had to be repaired was grievous. The top picture shows two of the four heavy toggle-shaft lugs that were broken right away. The repair of each lug was the kind of poser that Barimar experts delight to tackle and solve.



The other picture shows the completed job. The four lugs were lined up so accurately before welding that subsequent machining was reduced to a minimum. As the crown was ready for service again within record time, the owners' losses on production were reduced to the lowest possible level. Only Barimar could have tackled an outside job like this—only Barimar could have returned the repair to the owners with the famous Barimar Money-back Guarantee.

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CRANKCASES: Fractures caused by broken connecting rods and run big ends, broken-off bearing arms, smashed sumps, cracked stud housings, broken bearing and flywheel housings, stripped drain-plug threads. IRON, ALUMINIUM OR ELEKTRON.
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OFFICIAL NOTICES

NIGERIAN RAILWAY CORPORATION

MOTIVE POWER OFFICER

THE Nigerian Railway Corporation invites applications for the following post:

Motive Power Officer.

Duties.—A Motive Power Officer is responsible for assisting in the supervision of locomotive utilisation, failure, water and coal supplies, lubrication and the employment of engine-men. He is further responsible for Rest Houses, Staff and Discipline and the maintenance of breakdown train equipment. Qualifications.—Candidates must have served an apprenticeship, graduateship or diploma course of pupilage with a Railway Company or locomotive manufacturers, with subsequent experience on a railway. Candidates should have had extensive experience in both utilisation and repair of locomotives and must have five years' experience in motive power organisation in the locomotive running section of a railway with knowledge of machine and repair shop methods and be capable of controlling staff and labour. Experience in diesel maintenance and utilisation an advantage. Candidates must possess A.M.I.Mech.E. or A.M.I.E.E. or be graduates thereof.

Salary.—In scale £1,100 x £50 per annum to £1,900 (inclusive of Overseas Pay) per annum. Starting salary according to qualifications and experience. Appointments may be on pensionable terms or on contract with a gratuity payable on completion of contract at the rate of £18 6s. 8d. to

£31 13s. 4d. for each completed month of service.

Tours.—15 months in Nigeria followed by 15 weeks' leave on full pay.

Quarters.—Partly furnished quarters are provided at low rental.

Allowances.—There are attractive family, travelling, transport and other allowances.

Send postcard before November 11, 1958, mentioning the post and this paper, for further particulars and application form to:

The London Representative,
Nigerian Railway Corporation,
Nigeria House,
9 Northumberland Avenue,
London, W.C.2.

MINISTRY OF TRANSPORT AND CIVIL AVIATION

ASSISTANT RAILWAY EMPLOYMENT INSPECTOR

ASSISTANT Railway Employment Inspector, Ministry of Transport and Civil Aviation. Pensionable post in London for a man at least 32 on October 1, 1958, requiring at least 10 years' experience of practical railway service, sound knowledge of British railway operation and maintenance and wide mechanical experience. Ability to write clear and concise reports essential. London salary scale £1,030—£1,250. Write Civil Service Commission, 30 Old Burlington Street, London, W.1, for application form quoting S4894/58/10. Closing date November 25, 1958.

TOKYO UNDERGROUND

(Continued from page 16)

is used and the track is only ballasted where curvature is great; elsewhere a solid bed is used, in some cases without sleepers. Rubber pads and rubber tie plates are employed to reduce noise and vibration.

The system is electrified throughout at 600 volt d.c. with third-rail current feed. There are remote-control section switches and an emergency warning device. For the existing six route-miles of the Marunouchi Line there are three 3,000-kW mercury rectifier substations; for the remaining 10.5 route-miles of this line a further four substations are planned, one of 6,000 kW, two each of 3,000 kW, and one of 1,500 kW. Signalling is by means of the repeating automatic block three-aspect colour-light system, incorporating an automatic train-stop device of the electro-pneumatic trip arm type.

Rolling Stock

For the sections of line now in operation, the Teito Rapid Transit Authority owns a total of 205 passenger cars each with accommodation for from 120 to 140 passengers. They are all four-wheel bogie motor units of welded steel construction and are claimed to be fireproof. Lighting inside the cars is fluorescent and the latest stock also incorporates electric fans in the ceiling.

Motors are of the high-speed type and fully springborne. Vibration and noise are controlled by the design of the bogie springs with rubber and coil dampers. The electro-pneumatic control system provides 18 notches, including five with a high current rating for initial acceleration and braking. Acceleration is at the rate of 3 ft. per sec. per sec. and normal retardation is 3.6 ft. per sec. per sec.; constant acceleration and maximum retardation of 6 ft. per sec. per sec. can be maintained by means of a compensating device. Both the air and dynamic brakes are controlled by one handle; this latter normally operates the dynamic brake, but should this fail the air brake is automatically switched in. The latest type cars on the Marunouchi Line have a tractive effort at full load of 3,200 kg. (7,056 lb.), with a maximum speed at full load of 20 m.p.h. Although, as already stated, trains now operate in four-car sets on the Marunouchi Line, it is the intention, when the line is complete, with transfer facilities between it and the Ginza Line, to operate six-car trains.

It is of interest to note that during the financial year 1957 the Teito Rapid Transit Authority made a net revenue, after meeting all expenses, of 2,305,000 yen (£2,305). Receipts totalled 2,950,182,000 yen (approximately £3 million). The number of passengers carried totalled 191,487,143 with a passenger-mileage of 770 million.

More equitable conditions in the coach business would result from the setting up of a national joint industrial council for this section, said Mr. E. A. Bailey, vice-chairman of the South Western (Provincial) Joint Industrial Council, at Torquay this week. Mr. Bailey regretted that since this council, at present the only one of its kind in the country, was set up about 12 years ago, membership on the employers' side had dropped and he made a strong appeal for a revival of interest. Mr. R. Woodley, regional industrial relations officer, Ministry of Labour, praised the Western Traffic Area which the joint industrial council represents, for the example which it had set. He understood that similar organisations were envisaged for the North-West, Leeds and Birmingham areas.

WATFORD RESIGNALLING

(Continued from page 9)

flat-bottom track and it was therefore necessary to adapt it to the bull-head track used by London Transport. The actual locking mechanism is enclosed in a casting forming part of the chair which supports the end of the switch tongue, so that there is a separate lock for each tongue. This is in contrast to the usual method of locking in this country, which consists of a plunger acting on the stretcher bar. The drive rod of the layout is connected to two switch locking arms which pivot at each switch. The locking arms are in the form of cranks, one arm of which is connected to the electro-pneumatic operating cylinder. The second arm is provided with locking faces which engage with corresponding faces in the lock box chair castings to achieve the mechanical locking.

Ground Tracklock

Each chairlock is equipped with an e.p.-operated ground tracklock which has to be lifted to allow the switch locking arm to move. The tracklock is locked by the occupancy of the protecting track circuits. The detector has been redesigned and the detection contacts can only be closed (to allow the signal circuits to be completed) when both switches are in the correct position and locked in that position by the ground tracklocks. The lines are continuously track circuited by means of single rail condenser feed track circuits. Rail circuits of the 10K type have been provided to detect that trains passing over facing points have completed their route and that the backlocking requirements have been satisfied.

Line cables for connections to signals, trainstops, points and track circuits are of the single and two-core rubber compound lead-covered type. Connections between cable runs and track equipment are carried out with the aid of screened multi-core cables with ribbed Neoprene sheaths. This type of cable has a metal screen around the insulation on each core, and, because of its ribbed sheath, may be laid on the ballast without concrete troughing or similar protection. Ten-core cables of this type are used for connections to points and trainstops and a recently developed three-core cable is used for signals.

The Rickmansworth signalbox now controls Rickmansworth itself, the whole of the Watford triangle junctions, and supervises the working at Watford. All the work in connection with the modernised signalling at Watford was devised, planned and carried out by Mr. R. Dell, signal engineer, London Transport, and his staff to the general requirements of Mr. C. E. Dunton, chief civil engineer, London Transport. Equipment is by the Westinghouse Brake and Signal Co., Limited, to L.T.E. requirements.

CLASSIFIED ADVERTISEMENT

ACCEPTANCE.—Advertisements can be accepted up to 2.30 p.m. on Monday to ensure insertion in the current week's issue. MODERN TRANSPORT is on Sale every Friday.

SITUATION VACANT

TRANSPORT. Man, 20-25, for Transport Office of large concern on Great West Road, Brentford. Some experience driver supervision, completion usual forms and returns; knowledge London area; salary £9-£10 per week; pension scheme, canteen. Write Box 3798, MODERN TRANSPORT, 3-16 Woburn Place, London, W.C.1.

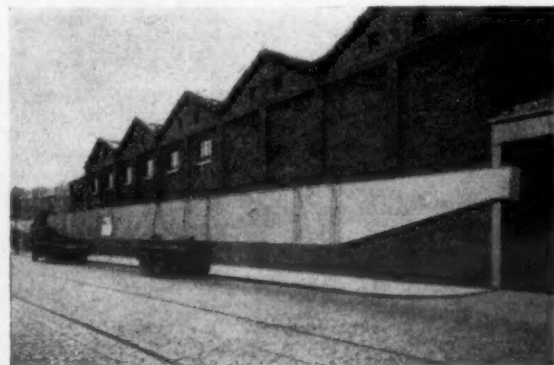


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SOCIAL AND PERSONAL

European Ministers of Transport

THE Prime Minister opened the ninth session of the council of the European Conference of Ministers of Transport on Wednesday this week at Lancaster House. The chairman of the council for the coming year will be Mr. Harold Watkinson, M.P., Minister of Transport and Civil Aviation, who will succeed Signor A. Angelini, Italian Minister of Transport. The conference was established in 1953 under the aegis of the Organisation for European Economic Co-operation to provide a forum in which inland transport questions affecting the efficiency and development of the European economy could be discussed. It is customary to hold the October session of the conference in the country of the chairman for the coming year in order to provide as part of the work of the conference an opportunity for ministers of Transport to see something of the transport systems of the member countries and so bring about a greater understanding of one another's problems.

Mr. R. G. Smith has been appointed principal traffic costing officer, Liverpool Street, B.T.C.

As already briefly recorded, Mr. G. B. Howard-Rice, until recently establishment services manager, Shell-Mex and B.P., Limited, has been appointed managing director, Power Petroleum Co., Limited. Mr. Howard-Rice joined the former British Petroleum company in 1927 and held various sales posts in London. He served in the



Mr. G. B. Howard-Rice

R.A.F.V.R. from 1939 to 1946, reaching the rank of squadron leader. After demobilisation he was with the petroleum board as assistant district operator, Metropolitan Region. He was made district manager, Leicester Division, Shell-Mex and B.P. in 1948; branch manager, Coventry in 1950; and divisional sales manager, Midland Division, in 1952. He returned to London as divisional sales manager, London Division, in June, 1954, and was appointed establishment services manager in head office in January, 1957.

The British Transport Commission announces that Mr. E. S. Cox, mechanical engineer (development), has been appointed assistant chief mechanical engineer, British Railways.

The Railway Benevolent Institution, at its last meeting, granted annuities to seven widows and five members involving an additional liability of £274 per annum; 168 gratuities were granted amounting to £1,663 to meet cases of immediate necessity.

We regret to record the death of Mr. Arthur Langton, who was chairman of Bournemouth Corporation Transport Committee for 21 years. He relinquished this office but remained on the committee until he ceased to serve on the council in May of this year.

The inaugural meeting of the Golden Jubilee session of the Railway Students Association will take place at the London School of Economics, Houghton Street, W.C.2, on October 29 at 6.15 p.m., when Mr. A. B. Valentine, member, British Transport Commission, will deliver his presidential address.

Colonel John Pye gave a luncheon party at the Trocadero Restaurant on October 7 in honour of the 80th birthday of his father, Mr. Henry Pye. Those present included Messrs. John H. Watts, H. Norman Lettis, Michael Pye (grandson), W. P. Cocks, D. R. Faires, H. A. Palmer, H. G. Cooper, G. A. Pither, C. A. Head, R. W. G. Underwood and J. Carey. Mr. Henry Pye, with Mrs. Pye, founded H. Pye and Son in 1919.

A British Transport Commission colour travel film, *Between the Tides*, has been awarded first prize in the educational category of the Venice Film Festival. Running for 22 min. it shows some of the plant and animal life to be found by the tourist and holiday maker on the West Coast of Britain. The film, which has already been seen in the West End of London, has since been awarded a first prize at the Cork Film Festival also.

The joint gift of a water colour of the Western Highlands was made to Sir Landale Train recently by the Civil Engineering Committee and the Signal and Telecommunications Committee to mark Sir Landale's retirement as member of the British Transport Commission. Mr. J. Taylor Thompson, chief civil engineer, London Midland Region, made the presentation supported by Mr. J. F. Fraser, chairman of the Signal and Telecommunications Committee. Mr. A. K. Terris, chief civil engineer, Eastern Region, and Mr. A. Woodbridge, signal engineer, Western Region, also spoke.

The Federal Minister of Transport, Rhodesia and Nyasaland, has announced that the Governor-General has appointed Sir Walter Harrigan as chairman of the commission which is to inquire into the rating structure of the Rhodesia Railways. Sir Walter has headed several former commissions of inquiry in the Federation, and is a former acting Chief Justice of Northern Rhodesia. Members of the commission will be: Mr. D. M. Robbertze, deputy general manager, South African Railways; Mr. J. R. Pike, until recently chief commercial officer, British Railways Central Staff; and Mr. W. Margolis, a well-known Rhodesian industrialist and economist.

B.N. Committee on General Transport

COINCIDENT with his retirement last month from Unilever, Limited, Mr. A. G. Marsden, C.B.E., resigned from the chairmanship of the General Transport Committee of the British National Committee of the International Chamber of Commerce, which he had held for several years. He is succeeded by Mr. L. G. Burleigh, transport officer of Imperial Chemical Industries, Limited, who, at a recent meeting of the committee, paid tribute on behalf of its members to Mr. Marsden's services to transport in general. His name, said Mr. Burleigh, would undoubtedly remain on record internationally for the invaluable part which he had played in consultations between transport users on the Continent. Adding his own personal tribute, Mr. Burleigh offered to Mr. Marsden their most sincere thanks for all that he had done in all spheres and for his great loyalty to his friends throughout.

Captain George H. G. Morris, master of the *Queen Elizabeth*, is appointed commodore of the Cunard fleet with effect from October 1, in succession to Captain Charles S. Williams, who retired on September 30.

We regret to record the death of Mr. Henry Charles Merrett, F.C.A. He was formerly a director of the National Omnibus and Transport Co., Limited, United Counties Omnibus Co., Limited, and H.M.S. Catherwood, Limited, and served as chairman of the latter two companies.

Mr. Tom Austin, M.I.R.S.E., who retires from the post of chief engineer, Siemens and General Electric Railway Signal Co., Limited, is the son of a Midland Railway stationmaster, and was educated at Lancaster, followed by technical education at Lancaster, Derby, Nottingham and Birmingham.



Mr. Tom Austin

He joined the telegraph department of the former Midland Railway in 1910 as an engineering apprentice, and in 1920 was appointed works technical assistant in the railway signalling department of the General Electric Co., Limited, in London. He continued in this capacity until the formation of Siemens and General Electric in 1926, when he became chief assistant engineer to that company, and in 1930 succeeded to the position of chief engineer. He is a past-president of the Institution of Railway Signal Engineers.

Eddison Plant, Limited, announces that Mr. H. Gibbons, A.M.I.Mech.E., A.M.I.Prod.E., has been appointed chief engineer in succession to Mr. J. W. Womar, following the latter's appointment as chief engineer of the Potteries Motor Traction Co., Limited.



Sir William Black, managing director of the A.C.V. group, opened the new depot at Basildon New Town of Commercial Vehicle Repairs, Limited, which is associated with Harold Wood, Limited, the road tanker operator. He was supported by Messrs. H. Wood (managing director), C. Coates (general manager), J. J. Dean (works manager) and R. H. D. Parkes (architect)

The 11th annual reunion luncheon of the Southern Railway Association was held at the Charing Cross Hotel on October 14, with Colonel Sir Eric Gore-Browne, the last chairman of the Southern Railway Company, presiding. Among other members present were Mr. Henry Brooke, Sir Eustace Missenden, Sir John Elliot and Major-General Gilbert Szlumper. Sir Philip Warter, chairman of the Southern Area Board, British Transport Commission, and Mr. Charles Hopkins, general manager, Southern Region, were the association's guests.

We regret to record the death in a road accident of Mr. S. H. Scholes, formerly assistant regional establishment and staff officer, London Midland Region. He entered the service of the former London and North Western Railway at Liverpool in 1905. After some station experience he was transferred to the staff office of the district superintendent at Liverpool, and a few years later to the headquarters staff office of the superintendent of the line. During the 1914-18 war Mr. Scholes served in the Royal Engineers (Transportation). Returning to the L.N.W.R., he was appointed, following its incorporation in the London Midland and Scottish Railway, to the staff office of the general superintendent, Western Division. In 1932 he was appointed assistant to the staff superintendent of the combined chief commercial and chief operating managers' departments. From this position he was promoted in 1943 to be assistant (general) in the labour and establishment office.

When people want their daily bread,
Vans can't lay up, the Baker said,
Bearings must be substituted
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So if you're wise, advice you'll take
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And the result? Very pleasing all round. Dutton & Knight now have a superb fleet of Scammell matched articulated 8-wheelers... their customers enjoy a first-rate delivery service... and Scammell have fulfilled repeat orders at regular intervals since they delivered the first tanker, built to the operator's exact requirements, in 1947. Incidentally that tanker has just completed 350,000 miles and still maintains its usual unflinching reliability.

Perhaps you have a transport problem—if so, let Scammell supply the answer. Their range of vehicles is extensive, from 3 to 150 tons—their facilities are at your disposal.

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IMPORTANT CONTRACTS

More Multiple-Unit Diesels for W.R.

ORDERS for another 168 diesel multiple-unit railcars for the Western Region of British Railways have been placed by the British Transport Commission. Of the new stock, 108 are for London suburban services from Paddington, 15 will go to the Bristol-Taunton area and 45 are for services in Devon and Cornwall, west of Newton Abbot. The Pressed Steel Co., Limited, Paisley, is to build 123 units and the remaining 45 are to be constructed by the Birmingham Railway Carriage and Wagon Co., Limited, Smethwick. All 168 vehicles, comprising 57 motor open second-class, 57 motor open brake second-class and 54 intermediate first- and second-class composite trailer cars, are to be delivered in 1959. They will be of standard design, 63 ft. 6 in. in length.

London Midland Region Contracts

The London Midland Region of British Railways has placed the following contracts:

Jerrum and Co., Limited, Derby, for steam-heating installation in the stripping shed of the locomotive works, Derby.

Harbour and General Works, Limited, London, S.W.1, for substructure pavings and trackwork at the new district electric depot, Longsight, Manchester.

C. A. Horton, Limited, Brierley Hill, for additional span to bridge to accommodate new roadway for Worcestershire County Council's improved scheme at Halesowen.

Edward Wood and Sons, Limited, Derby, for new transformer substation at the carriage and wagon works, Derby.

Simon-Carves, Limited, Stockport, for alterations to bridges on Stockport to Manchester line.

Leonard Fairclough, Limited, Adlington, for provision of inspection pits at the motive power depot, Crewe North.

E. B. Jones and Rawlinson, Limited, Salford, 6, for new signalbox at London Road, Manchester.

S. Rhodes and Co., Limited, Sheffield, 9, for removal of track and structure on Ladsmanlow branch.

Western Region Contracts

New contracts placed by Western Region of British Railways include the following:

Sir Robert McAlpine and Sons (South Wales), Limited, Port Talbot, for doubling the Ogmore Valley Extension line, the provision of exchange sidings, the reconstruction of one bridge, the construction of an amenities block and other work to be carried out at Margam marshalling yard, Port Talbot.

British Insulated Callender's Cables, Limited, Belvedere, for electric lighting facilities, etc., at Margam marshalling yard, Port Talbot.

Lee, Beesley and Co., Limited, Swansea, for electric lighting facilities, etc., at the amenities buildings and the sorting sidings signalbox at Margam marshalling yard, Port Talbot.

W. H. Streeter, Ltd., Tudor Road, Hampton, Middlesex, construction of earthworks, examination pit, drainage, fuel storage depot, amenities block and retaining wall in connection with the provision of fuelling and inspection facilities for diesel railcars at West London carriage sidings between Acton and Westbourne Park Stations.

Vic Hallam, Limited, Langley Mill, near Nottingham, for the superstructure of a new signalbox at Honeybourne West Loop.

Free-Piston Engines for Oil Pipeline

National Free Piston Power, Limited, a subsidiary of the Hawker Siddeley Group, has been awarded a contract by the Iraq Petroleum Co., Limited, for a 3,000-h.p. free-piston gasifier turbo-pumping unit for erection on its pipeline in Syria. The machinery will comprise four 1,000-h.p. GS34 free-piston gasifiers and one Series 300 expansion gas turbine manufactured by Brush Electrical Engineering Co., Limited, which will drive a Mather and Platt Pluvane pump. The gasifiers

will be able to run on the crude oil being pumped through the pipeline. The contract also covers the design and supply of all auxiliary equipment. This is the first application of free-piston gasifiers to pipeline pumping and it is expected that the plant will be in operation within 15 months. The approximate value of the contract is £150,000.

British Lorries for Portugal

A contract for 14 Super Hippo three-axled dump trucks has been placed with Leyland Motors, Limited, by Hydro Electrica De Cavado through the Leyland agent in Portugal, Francisco Garcia and Cia., Limitada, Lisbon. Fitted with 12-ton capacity bulk cement tanks, the vehicles will draw trailers with similar bodies to carry cement in powder form for the Cavado hydro-electric project.

Fuel for Jet Air Liners

Approximately 680,000,000 gal. of kerosene-type fuel for jet-engined air liners will be supplied to United Air Lines by five oil companies under contracts recently announced. By the end of 1960 the United jet fleet will include 40 Douglas DC8s and 11 Boeing 720s. The suppliers are Esso Standard Oil, Standard Oil of Ohio, Shell Oil, Phillips Petroleum and Standard Oil of California. Contract length varies from three years for Shell, Standard of Ohio and Standard of California to four years for Phillips and five for Esso, all effective January 1, 1959. The contracts are based on the areas served by United's 14,000-mile system. Esso will supply stations from the Atlantic coast to Pittsburgh; Standard of Ohio, Cleveland to Detroit; Shell, O'Hare Field at Chicago; Phillips, Omaha, Kansas City and Denver, and Standard of California, Salt Lake City to Honolulu, including the Pacific Coast and Pacific north-west.

TENDERS INVITED

THE following items are extracted from the Board of Trade Special Register Service of Information. Inquiries should be addressed, quoting reference number where given, to the Export Services Branch, Board of Trade, Lacon House, Theobalds Road, London, W.C.1.

October 30—Burma.—Union Purchase Board for 7,500 positive and 7,500 negative LEAD-ACID BATTERY PLATES, 5½ in. by 5 in. and 7,500 PLASTIC SEPARATORS for same. Tenders to the Director-General, Union of Burma Purchase Board, St. John's Road, Rangoon. (ESB/24972/58.)

November 1—Formosa.—International Co-operation Administration for two diesel LORRY CHASSIS-CARS for 12,000-lb. load and 22 sets 8.25-20 12-ply TYRES and TUBES. Tenders to the Central Trust of China, Purchasing Department, 68 Yen Ping Nan Road, Taipei, Taiwan. (ESB/23994/58/ICA.)

November 3—Pakistan.—Department of Supply and Development for 50 10-ton diesel ROAD ROLLERS. Tenders to the Deputy Director-General of Supply and Development, Chittagong. (ESB/23953/58.)

November 5—Vietnam.—International Co-operation Administration for one petrol-engined TRACTOR for 16,000-lb. g.v.w. and three low-bed SEMI-TRAILERS of 15 tons capacity. Tenders to the Central Purchasing Authority, P.O. Box 131, Saigon. (ESB/24923/58/ICA.)

Export Opportunity.—Sweden.—Mellander and Ericsson AB, Ostra Hamngatan 52, Gothenburg, would like to represent in Sweden a United Kingdom maker of ELECTRIC FORK-LIFT TRUCKS in the 2,000-lb. range. (ESB/22220/58.)

SHIPPING AND SHIPBUILDING

Japanese Offer to India

THE Shipbuilding Association of Japan has intimated to the Indian Government that it is prepared to send a technical team to India to study local conditions and other details to explore ways and means of possible collaboration in constructing the second shipyard in India and is further prepared to contribute Rs.20,000,000 towards capital cost of the project.

Swedish Owner with Large Tanker

THE 40,000-ton tanker *Sven Salen*, the world's biggest diesel-propelled tanker and the largest cargo unit in the Swedish merchant marine, was delivered recently by Gotaverken to Rendei A.B. Jamaica, of the Salen Group in Stockholm. The vessel is the largest and fastest tanker of any description built by this yard.

For Far-Eastern Waters

NOW fitting out on Tyneside after her launch last month, the 10,900-ton deadweight cargo motor ship *Eastern Trader* for the Indo-China Steam Navigation Co., Limited, is a product of Swan, Hunter and Wigham Richardson, Limited. Her scantlings are such that she can be used either as an open or closed shelter decker. The upper deck has no sheer forward of amidships giving exceptionally high tween decks suitable for the carriage of large packages and arrangements are made on the shelter deck for timber cargoes.

Containers on U.S. Line

WITH economics of ship operation making it absolutely essential that there should be fast turnaround to offset high labour costs, United States Lines visualises an expansion of the successful bulk container system applying between U.K. and Continental and Irish ports to deep sea cargoes, it is stated. The line is completely satisfied that the bulk load system carries the solution to turnaround problems and is designing new ships with much bigger hatch openings to allow bulk containers to be stored easily. New ships are also being given better cargo handling gear. Loads would require to be bulked at factories and warehouses to eliminate lost time in ship turnaround at the docks. The principal necessity arising from this policy was the maximum co-operation from every individual concerned in the operation, from the dock labourer to the shipper.

Cork Agreement Hailed

SPEAKING in The Hague recently, Mr. Sean Lemass, Eireann Minister of Industry and Commerce, said that the £5,500,000 agreement whereby Verolme United Shipyards, Rotterdam, would build and repair ships in Cork up to 50,000 tons deadweight, was "a reason for us to put out the red carpet. The Minister said that the deal was "a gesture of confidence in the industrial future of Ireland" which was warmly welcomed

and which, it was hoped, would encourage others to invest in the country. He said that the financial and other facilities to be granted to the Dutch shipyard by the Eire Government were not exactly defined at this stage. Actually the situation was that Verolme would go ahead and "should it at any time run short of cash, the shipyard could always apply to the Irish Government for funds." The Government would also provide other facilities in the field of property. Some of the sites that Verolme required were owned by the Irish Government, which would see that they became available for the enterprise.

Oil Mist Detector Ordered

AN order has been placed with the Gravinger Manufacturing Co., Limited, to fit a Gravinger-B.S.R.A. oil mist detector to the six-cylinder main diesel engine of the 6,500-ton deadweight cargo motorship *Sugar Refiner*, recently launched by Hall, Russell and Co., Limited, Aberdeen, for Silvertown Services Shipping, Limited. The Gravinger-B.S.R.A. oil mist detector, a photo-electric automatic device to give warning of dangers leading to diesel engine crankcase explosions, was given formal approval by the Ministry of Transport and Civil Aviation in May this year, after successfully completing extensive service trials at sea. Ministry approval carries with it permission for the relief door area to be reduced from ½ sq. in. per cu. ft. of gross crankcase volume to ¼ sq. in. if oil mist detection is used, and Ministry backing has resulted in a number of orders being placed for this detector.

FINANCIAL RESULTS

NOTES on the trading results, dividends and financial provisions of companies associated with the transport industry are contained in this feature, together with details of share issues, acquisitions and company formations or reorganisations.

Trafford Park Estates

Trafford Park Estates, Limited, which at present owns the whole of the issued debenture and preference capital and over 62 per cent of the issued ordinary capital in Trafford Park Cold Storage Co., Limited, is offering to purchase holdings of £1 ordinary shares in the cold storage company at 57s. 6d. per share payable in full in cash.

Gloucester Railway Carriage and Wagon

For the year ended May 31, 1958, the group net profit of the Gloucester Railway Carriage and Wagon Co., Limited, was £227,239 (£199,327) after taxation. Profit attributable to parent was £199,368 (£168,373). General reserve receives £97,434 (£65,000) and the preference and ordinary dividends, the latter 15 per cent (same), take £103,339 (same), leaving a balance to be carried forward of £68,772 (£64,177).

A.P.V.

Reporting on trading results for the half year ended June 30, 1958, Mr. W. E. Jenkins, chairman of the A.P.V. Co., Limited, said that they were better than those for the same period of 1957, but in the current period prospects are less favourable owing to a smaller volume of orders and reduced profit margins. There is no interim on the ordinary, which received no distribution in 1957 or 1956.

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